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THE
SCIENCE OF MEDICINE,
AND THE
Science of Life, and Theory of Disease.

COMPRISING

A CONDENSED VIEW OF THE THEORY OF DISEASE,
AND THE APPLICATION OF REMEDIES,
AND MEDICAL HYGIENE.

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OF

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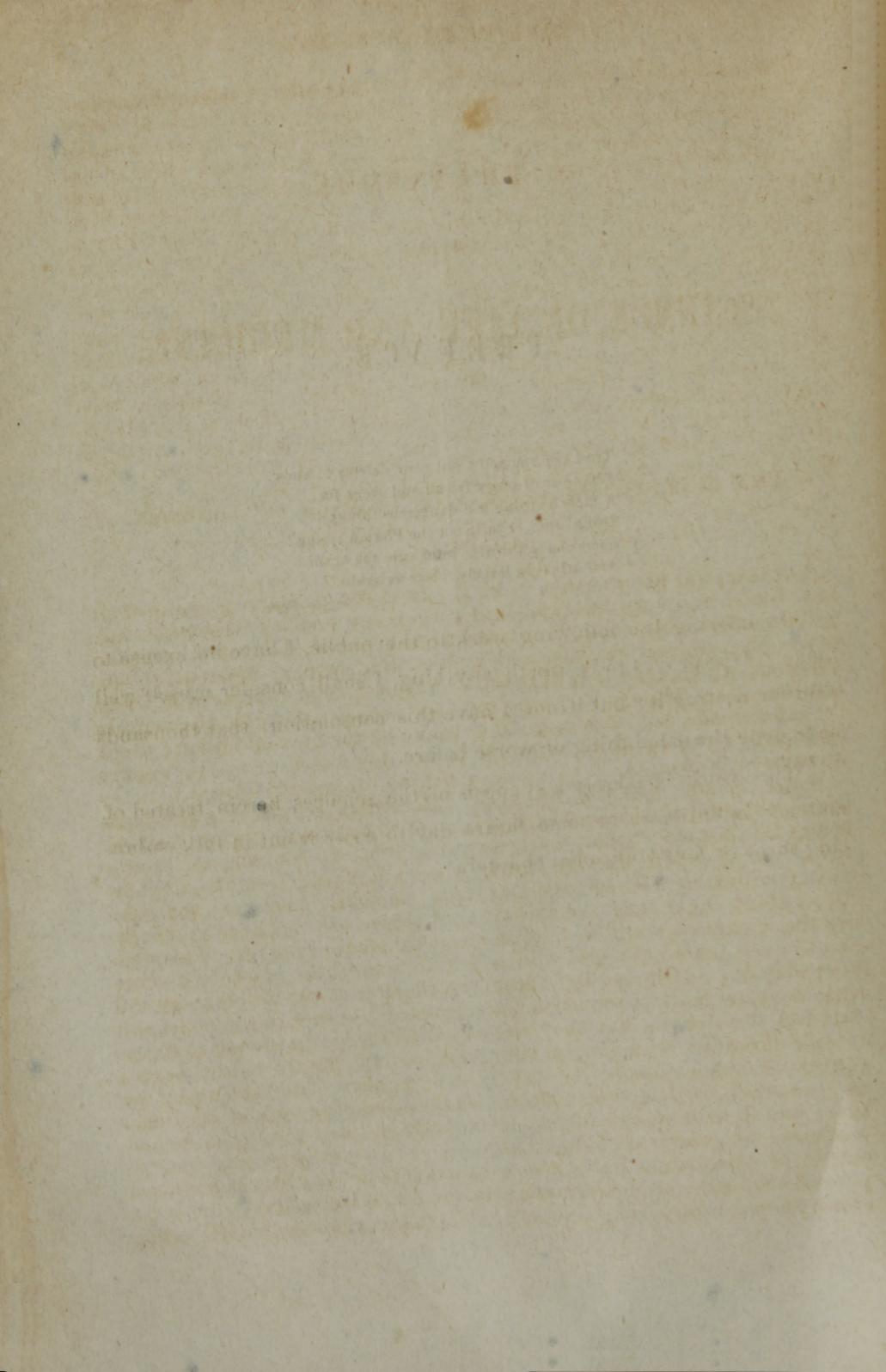
PREFACE.

Trust not yourself; but your defects to know,
Make use of every friend and every foe.
A little learning is a dangerous thing;
Drink deep, or taste not the Pierian spring:
There shallow drafts intoxicate the brain,
And drinking largely sobers us again."

—*Pope.*

IN offering the following work to the public, I have no excuse to make. If it proves to be worth anything, I shall consider myself well paid for writing it; but if not, I have this consolation: that thousands have done the same thing or worse before.

This work is merely a synopsis of the sciences herein treated of, and my intention is, at some future day to write it out in full, embracing three or four additional chapters.



A TEXT-BOOK

ON THE

SCIENCE OF LIFE AND MEDICINE.

THE SCIENCE OF LIFE, AND THEORY OF DISEASE.

CHAPTER I.

THE essential phenomenon of animal life is, and very likely always will be, measurably veiled in obscurity. Nevertheless, the laws which govern it, which are the laws of nature, are plain, simple, and easy to be understood; and this is what I now propose to speak of, with all its various influences.

Water is the medium by and through the aid of which all earthly bodies are formed; hence, water is one of the agents in the vital process of animal as well as vegetable life. Heat, light and electricity are the agents required to vitalize, and to perpetuate animal as well as vegetable life. Although light may seem doubtful because some fish are found in dark caves, but they are merely exceptions to a general rule—they are anomalies—they have no eyes; they are defective in structure; and I believe this defect is produced by want of light, and proves of itself that light has a powerful influence on the formation of the animal structure.

Heat is a primary element of all animal as well as vegetable life. Even in the cold blooded animals, heat is a primary element of life, for the serpents become stiff when cold, and the tortoise hatch their young by the heat of the sun; there is nothing lives, grows or decays without the agency of heat.

Electricity, or vital electricity, is one of the primary agents of all organic life. It controls the nerve power; it is polarized like all common electrical currents; the afferent nerves are in opposite polarity from the efferent nerves. This electro-nervous fluid is evolved from the changes of the fluids in all the organs and tissues in the body, and especially from the process of digestion, which supply to the nerves their vitality and strength, by which means the animal organism becomes enabled readily to decompose, or to recombine any and all substances which may be needed in the animal economy.

Heat, light and electricity, acting

on animal matter by the agency of water, produces motion, and determines the course of the fluids, causing them to flow to and from certain established centers, as is plain to be seen in the formation of the chick by the incubation of the egg. Until the body is fully formed in every part, the heat is supplied from the parent, after which it is capable of generating heat within itself sufficient for the perpetuation of life and the future growth of the body. Hence, life depends upon certain contingencies, which when rightly associated, produce motion, which facilitates organic changes, by which means matter is formed and transformed into organs and tissues, and finally into a perfect living being.

The beginning of all animal life is under water, or in a fluid of which water forms the greater part;—(hence man is an aquatic animal in one sense.) The blood is 80 per cent. water—without this preponderance of water, motion of organic matter would be impossible, and motion is one of the first principles of life, for without motion matter could never become endowed with life.

In the formation of the chick, the first sign of life is motion, which is immediately followed by organic changes in the fluids around the vesicle or centre point, which results in the formation of white blood. The first sign of the organization of matter is the formation of red blood, or the change of white blood into red, and the red blood forms the nerves, blood vessels, organs, tissues, bones, &c., for healthy blood contains all the elements necessary to the formation of the body. The formation of the body in the mammifer tribe is like the chick, only under different circumstances; that

is to say, in man and all the animals which suckle their young.

The circulating system of the human body is composed of arteries, veins, lymphatics and capillary vessels. The arteries and veins form two complete circles, of which the heart is the grand center. The veins, which return the blood from all parts of the system to the heart from where it is thrown into the lungs and back to the heart on the opposite side; from thence it goes out to all parts of the system, to nourish and support all the organs and tissues, and also to supply all the secretions, the fluids of digestion, exhalation, the excretions and the growth of the body, to effect which it has to pass through all the organs, tissues, and the flesh; after which it passes into the veins, which carry it back to the heart again from where it started. Thus the blood is continually performing a double circuit; it goes from the heart into the lungs and back, in which course it becomes oxydized, and assumes a more florid color. This is one complete circuit. Then it goes out from the heart to every organ and tissue, passing through the capillary vessels into the veins, and so on back to where it started from. And these two circles, together with their connections and dependencies, form one complete circulating system, of which the heart is the grand center.

The lymphatic system forms a separate circulating system, and they constitute what is called the absorbing system. They are named from the lymph, or milk like fluid which they carry. They are minute transparent vessels, uniform in size, having numerous valves, which give them a knotted appearance. They are intercepted by numerous oblong, flattened bodies,

called lymphatic glands; they divide before entering a gland, into several branches, and after leaving it unite again, forming a single trunk. Their office is to collect the nutritive product of digestion from the alimentary canal, and also to secrete or absorb a certain class of fluids from the skin and the various other organs and tissues, which are conveyed to the thoracic duct to be mixed with the chyle, and these two fluids combined, form a constant supply to the blood, passing into the large vein near the heart. Many fluids which are taken into the stomach are taken up by these vessels, and pass into the circulation without being subject to a formal process of digestion. These vessels, together with their glands, constitute one link in the grand chain of the organic functions.

To the nervous system there are many centers. The brain is the grand center of all the nerves of sensation and motion, called the cerebro-spinal system; the nerves which rule all the organic functions, called the organic nerves, are governed by centers situated in the vicinity of the stomach and bowels, called the semi-lunar and solar plexuses. There are two complete sets of nerves, yet they all connect together in every possible manner and form. The main bulk of the flesh is but little less than a bundle of capillary vessels; they form a perfect net-work of hollow hair-like tubes or fibres in every part of the body; when the blood enters them it loses its redness, and assumes it again on entering the veins.

It is in the capillary vessels that all the organic functions take place—absorption, secretion, exhalation, nutrition, &c., are functions which legitimately belong to the capillary vessels—it is by the agency of these

vessels that the growth of the body is effected.

When the blood passes through these vessels into the liver it is changed to bile; in the stomach to gastric juice; in the kidneys to urine; in the saliva glands to saliva, &c. Each organ secretes a juice peculiar to itself, which when united to the blood, or to parts of the blood, forms bile in the liver, gastric juice in the stomach, &c., the sum total of which, added together, form the fluids of digestion, by which the formation of blood is effected in the bowels in the form of chyle, which is taken up by the secreting mouths of the lacteals and carried into the circulation by the thoracic duct. In passing through the capillary vessels the blood loses the vivifying properties and florid color it received in the lungs, and becomes dark by the loss of its best particles in supplying the growth of the organs, tissues, flesh, and the various secretions, &c. They are called capillary vessels, because the fluids in them move by capillary attraction, yet the blood forced towards them from the arteries accelerates the motion of the fluids in them. The organic nerves rule their functional action, and have some effect on the motion of the fluids in them, and as there is a positive and a negative to all electrical currents, so there is a positive and a negative to all nervous currents, and these peculiar attributes, known as vital or animal chemistry, govern all the organic functions by imparting to the fluids and the organs a peculiar power, by which they are enabled to manifest a sort of elective affinity in functional action. But all these fluids and especially the blood are endowed with a life power peculiar to themselves while in a state of health,

which when aided by the organic nerves, are enabled to move toward certain points, and to form themselves into organs, tissues, bone, flesh, &c., as seen in the formation of the chick.

So we shall find that the motion of the fluids, the transformation of the blood corpuscle into the animal fibre and tissues, depends upon three circumstances, viz.: a vitality vested in the fluids—they possess a life principle within themselves which is self-moving and self-controlling, all other things being equal; secondly: the effect of the arterial circulation, which communicates a vibratory motion through the capillary vessels and constitutes motion, the first principle of all organic action; thirdly: the effect of the organic nerves, which hold a controlling influence over all the organic functions, under which circumstances the blood is endowed with a peculiar power of elective affinity.

By elective affinity, I mean that power which resides in the blood and enables it to change its form whenever and wherever the circumstances are favorable for it to do so, and into whatever form circumstances require, as in the liver, to bile; in the kidneys, to urine; and in the saliva glands, to saliva, &c.; and while it is passing through the capillaries in the flesh, the power which enables the particles of blood to leave the circulating current and to form themselves into an organ or tissue and become flesh, to increase the growth of the body and add strength to the system. This is called vital or animal chemistry, and is an abiding law of all animal life.

And furthermore, the life of the fluids depends on circumstances, that is, on an unobstructed circula-

tion, on motion, and a continued supply of nerve force, which is evolved by the changes in the circulating fluids, like as the galvanic fluid. The nervous fluid or nerve power is constantly being supplied to the nerves by the animalization of the fluids, or from digestion, nutrition, &c. Animal heat is also generated from or by the changes of the fluids in all the organs and tissues in the body, and especially in the skin.

All the organs connected with the alimentary canal conspire to the process of digestion, and digestion forms the blood (the spleen, says Dr. Frank, of Berlin). When water is drunk it passes into the spleen, where it is decomposed—the hydrogen of the water passes by the portal circulation into the liver to be used in the secretion of bile.

“The bile and urine added together forms the blood.”—*J. Liebig*. So we conclude the kidneys act as counterbalancing organs, an offset to atone for the abstraction of bile, and very likely for other losses. They act as equalizers, so that for every ounce of bile that is taken from the blood to be used in the process of digestion, a certain quantity of urine must be disposed of in order to preserve the blood in its healthy equivalents.

All the fluids of digestion are decidedly alkaline, the bile being little less than a compound of soda. The gastric juice of a turkey will dissolve a rock, a thing which cannot be done by art; and so it is in man: the juices which digest the food are perfect solvents—they melt down and dissolve the food and fit it for the formation of blood. The old doctrine of fermentation is a perfect humbug and an absurdity; there is no such thing as fermentation in the process of digestion, nor

ever can be in a state of health.

The organs which are concerned in the purification of the blood, are the lungs, skin and kidneys. The amount of excrementitious matter which passes off from the blood by the skin and the lungs in twenty-four hours is sometimes very great, amounting to several pounds; and whenever these exhalations are checked or suspended, and remain so any length of time, disease in some form is certain to follow.

The kidneys, strictly speaking, are not depurating organs, for what they take from the blood in a state of health is perfectly healthy, yet it being in surplus and no longer needed, must be disposed of or else health could not continue long; therefore we class them with the depurating organs.

In order to the continuance of health, the motion of the fluids must be uninterrupted and free throughout all the organs and tissues, and especially the skin and the capillary vessels of all the organs, for while this is the case the organic functions are duly performed; digestion, chylosis, secretion, excretion, &c., are all effected in perfect order, and there is nothing left in the organs or accumulates in the blood of an unhealthy or poisonous character.

The first effect of all morbid agents or causes of disease are alike—one and the same thing under all circumstances. If we over-exercise on the mountain's height, or visit the poison marshes of the tropics or the boggy fens of some lowland swamp, or sleep in the damp dews of India, or expose ourselves in the rain or snow, or in a pestilential hospital or city to the virus of variola or the measles, or breathe the pestilential air from the typhus or the plague, it is all the same as far

as the first effect is concerned. The first effect of all morbid agents or causes of disease is a checked or an obstructed condition of the circulation of the fluids in the capillary vessels, the consequence of which is to check, suspend, or to injure in a greater or less degree the healthy performance of all the organic functions, and to weaken the vital powers; the result of which is, the organs in default of functional action become overloaded with impure and unhealthy secretions. In consequence of a retarded circulation, the secretions become sour and sometimes even acrid, and the more complete is the obstruction the more sudden will the fluids become vitiated, when they corrode the organs and tissues, and become a secondary cause of disease, and this secondary cause of disease will determine the manner and form of the affection or disease precisely in accordance with the intensity of the first cause, the constitutional conformation and the circumstances which may surround the patient at the time; the result of which is the development of a peculiar or distinctive disease, which, if the fluids are tainted with variolous matter, will be the small pox; if with marsh poison, it will be some form of malarial fever; or if associated with typhus, it may be typhus or common fever, &c., &c., as follows, to wit:

A person receives an injury, from the effects of which he faints, during which time all the animal functions cease; the injury being slight he soon recovers, and health continues. In this case there is no secondary effect, and the first is only temporary. Secondly: the injury may be very severe. from the first effect of which the patient recovers a little, then falls back and

dies. In this case there is only the first effect, for death intervened before the second effect could transpire. Thirdly: a person receives a severe injury, at which time all the animal functions are suspended, from which he partially recovers: but the first effect continues, until from a defective functional action and an impeded circulation of the fluids, the secretions become sour and vitiated, the result of which is the development of another condition, which marks the second stage, being the result of the first, the consequence of which is fever, from the effects of which, added to the first, he dies after suffering a long time. In this case death took place from a secondary cause, that is, by the corroding and poisonous character of the secretions, which added to the first cause, produced death—which might have been avoided by appropriate remedies, that is, by not allowing unhealthy accumulations to continue to the injury of the organs.

The small pox virus is a specific poison—it will eventually produce a certain effect on the organism—so are all other morbid agents, in a measure; the forming stage in all are alike; it is only after the accession of the second stage, the result of which determines and establishes a distinctive disease. A man enters a hospital and attends the sick of typhus or any epidemic disease; he inhales the poisonous effluvia exhaled from the sick, after which he feels well as usual oftentimes for weeks, and sometimes goes clear of disease altogether; but in some cases, eventually the signs of disease appear: first, the circulation in the capillary vessels becomes torpid, the exhalations from the skin and lungs, and the animalization of the fluids cease to

be free and healthy, soon after which a cold torpid feeling steals over the system, which may continue for some indefinite time, from a few days to one or two weeks, (in small pox, three days) at which time this cold languor-like torpid feeling gives place to a reactive fever, the same as in ague, only under different circumstances, all the causes of disease being more intense, at which time the patient first begins to believe himself sick; and this is the beginning of the second stage, soon after which the disease assumes a decided form, showing the characteristic features of a distinctive and peculiar disease not before noticed, which have become suddenly developed after the accession of the second stage or condition.

When a person takes a sudden cold, the first effect is precisely the same so far as the manner in which it takes place, and it depends entirely on circumstances what the result will be. It may result in typhus, billious, or common fever, or a cough, ending in consumption, or some slight catarrhal affection, the termination of which may be in a few days or a few weeks, or it may continue at intervals for as many years, and then terminate in death by decline or consumption, depending entirely on opposing treatment or circumstances. Native strength in the full vigor of health is not easily brought under the influence of disease: it takes a long time and a great deal of hard usage to effect it sometimes. The late and lamented Samuel Forry, M. D., who died in New York City, is a case in point. He made a voyage round the globe, being gone three years, during which time he was more or less exposed in different and highly malarial countries,

which took effect in a slow and imperceptible manner. He was not aware of it at the time, yet the effect was no less certain, and a long time afterwards while at home he fell a victim to its influence.

Daniel Webster is another case: he got the seeds of his disease in an electioneering campaign in the South-western States, which remained dormant until some time after getting home, when by some unusual exposure, over exercise, or cold, it took effect, of which he died. In these two cases the ostensible cause of death was doubtless malarial poison, which had been received a long time previous. The *post mortem* in Webster's case showed the unmistakable signs of the result of some invisible morbid agency, which may be accounted for in two ways: first, by the effects of an epidemic state of the air; second, he got the seeds of his disease while traveling in the South-western malarial States. And then when we consider how inadequate the treatment must have been under the circumstances, it is no wonder that he died.

"In the treatment of the disease, (*i. e.* Webster's) attention was particularly directed to the duodenal obstruction, relief from which was obtained by the laxatives occasionally administered, and these, with opiates, were almost the only important medicinal agents."—*New York Journal of Medicine*, Vol. 10, Page 283; *New Series*, March No., 1853, where it is credited to the A. M. Journal of Med. Science.

It is a common occurrence that people from the New England States spend one, two or more years in these malarial countries and enjoy good health all the time, when at some indefinite time after returning home they get the ague, or

some other kind of malarial fever or disease, which generally comes down on them soon after some unusual exposure, over exercise, over eating, or some slight hurt, &c., which sometimes amounts to a severe attack, and generally illy bears trifling with, and these attacks are oftentimes the result of causes or exposures which transpired years before, the effects of which were continued in a greater or less degree during all that time, and only wanting some trifling exciting cause to kindle into a flame all the dormant elements of disease.

Thus we find that all morbid agents or causes of disease must first have their effects, and this effect must continue in contagious diseases some certain length of time, and in non-contagious diseases some indefinite time, according to circumstances, before a distinctive disease can become manifest; and this distinctive disease will be precisely in accordance with the antecedent cause, the constitutional conformation of the patient, and the circumstances which may surround the patient at the time.

All diseases seem inclined to run a course according to circumstances. Thus, you go to Panama, and you will get a fever called the Panama Fever; at New Orleans, the yellow fever; on the Western prairies, the ague, or bilious remitting fever; in Connecticut, the typhus fever; in the city of New York, a little of everything, well mixed up; in the city of Mexico, dry mortification; and on the New England coast, the consumption, &c. There is just as much difference in the diseases of a latitude or country as there is in the soil and productions, and no more.

The peculiarities of all diseases are brought about and governed

by a combination of circumstances, which taken collectively, form and govern the disease. Hence we find that the manner in which causes take effect are alike in all parts of the world, circumstances being equal, but their course and termination are different in accordance with the latitude, soil and country. The same causes which would produce a yellow fever in New Orleans, or a bilious fever in Kentucky, might produce the typhus fever or consumption in the New England States.

As a general thing, when a person falls under the influence of any cause of disease, the first effect extends to all the organs and tissues, transmitted there by the nerves, by which digestion, chylosis, assimilation and nutrition are effected from the start, *pari passu* according to the intensity of the offending cause, and the circulation of the fluids in the capillary vessels become checked in the same ratio, and the organic functions soon cease to be free and healthy. And this effect may be so slight that it may continue for weeks, and sometimes for months, hanging on a balance between health and disease, when a very little medication, or even a little caution or management might turn the balance in favor of health, or a very slight exciting cause may operate equally potent to confirm disease, or it may be of sufficient intensity as to bring the individual immediately under the influence of an active state of disease.

While under the influence of this first condition, whenever the circumstances conspire to establish or to bring on actual disease, and the first effect of the foregoing cause has continued a sufficient length of time to destroy the tone and the

vitality of the fluids, then the result soon becomes apparent, and the forming stage gives place to fever, or the disease becomes fixed upon some organ or tissue, followed by pain, restlessness, &c. The exhalations from the skin now become more completely closed, and all the secretions become decidedly vitiated, and the internal organs become loaded with impure and vitiated matter, (bilious, as people say) the pain and suffering increase, the appetite fails, &c., &c., the intensity and result of which will be precisely in accordance with the intensity of the primary cause, the constitutional conformation and the surrounding circumstances, which will be fever—yellow, bilious, congestive or typhus; or it may eventuate in a cough ending in consumption, abscess on some internal organ as the liver, lungs, &c., or on the skin in boils, carbuncles, fever-sores, mortification, osteo-sarcoma, rheumatism, &c. But in all cases the manner and form the disease will assume will be precisely in accordance with the intensity of the effect of the primary cause, the constitutional conformation and the circumstances which may surround the patient at the time.

All grave diseases have three stages: the forming stage, the stage of excitement or acma, and the stage of decline, collapse, or convalescence. Many of the minor affections have but one stage, the stage of formation, as when it may be checked or cured before it has become seated. As a general thing, the fluids become more or less impure in the forming stage, but more decidedly is this the case in the second stage, and this impurity in the fluids increases *pari passu* according to the intensity of the disease as it progresses.

All medicines take effect in two ways: first, by the nervous conduction, (electrically,) and second, by passing the rounds of the circulation. Hence, as long as the organic functions continue active, which supply and maintain a normal state of the nerve force, so long small doses of medicine are far preferable to large ones, under which circumstances, roots, herb teas, and vegetable tonics will oftentimes have a more powerful effect for good than the most concentrated medicines. But when the organic functions cease to be free and healthy, as indicated by a torpid state of the nervous sensibility, which generally comes on at or before the accession of the second stage of disease, larger doses of medicine are generally required, for then you have to act on the powers of life by actual contact, therefore you have to give larger doses in proportion to the nervous torpor—the blunted state of the sensibilities require a greater amount of the stimulus of medicine to arouse them into action.

And as I stated before, the nerve force comes from and by the organic functions, the nerve power is derived from the changes in the fluids in all the organs and tissues, and especially assimilation; hence, when the organic functions cease, the nerve force will also cease in the same proportion.

As soon as the circulation of the fluids becomes abnormal, the depuration of the blood is no longer perfect, soon after which it becomes loaded with impure and unhealthy matter, from which source all the secretions partake, soon after which the capillaries in all the organs concerned in digestion become loaded with vitiated matter, and sometimes with green, dark brown or

black secretions (popularly called bilious), which are constantly accumulating in these organs during the course and progress of all acute diseases, and measurably so in all others. Any disease will assume a mild or malignant form according to the greater or less effect produced on the organs and tissues by these corroding, sour, and sometimes acrid accumulations. And just in proportion to the length of time that these irritating accumulations are allowed to rest in the organs and tissues after the accession of the second stage, will be the measure and extent of the disease.

The effect of medicine on the human organism depends on the condition of the circulation and the activity of the nerve power, and this is the reason why sometimes medicines in Homœopathic doses will have a decided effect, while under different circumstances it will have no perceptible effect at all.

Thus we find that in treating diseases, in order to be successful in the administration of remedies to cure, or to prevent approaching disease, it is necessary first to know and understand the laws of nature which maintain in health, and the laws which govern the vital powers in disease, which proceed in the following order, to wit: During the forming stage of all diseases, which is the first effect of all, or of any morbid agencies or causes of disease, the disease is only functional, during which time all treatment must be directed to the preservation and support of the vital functions, and to promote a free action of all the organic functions, in order to avoid the result which may happen to the organism from a checked or suspended state of the organic functions, for whenever the

organic functions become checked or suspended by any cause, the fluids become injured, and the organs become loaded with vitiated secretions in proportion to the intensity of the cause and the length of time it may continue. For whenever the effect of any morbid agent is allowed to continue until the fluids become deteriorated, and the organs become gorged with vitiated matter or secretions, then the disease will soon assume a decided form, and pass into the second stage, after which the disease will assume an additional feature, and become both functional and structural; functional from a loss of functional action, and structural from the effect of the morbid secretions which have accumulated in the organs and tissues during the forming stage, which clog, corrode and injure the organs and tissues, which from their acrid nature become a secondary cause of disease, which in addition to the foregoing offending cause, now constitute a new and ruling feature of the disease, and demand a different and more decided treatment; under which circumstances the treatment must be directed to these peculiar features of the disease, and requires that which will relieve this overloaded condition of the organism, and then to restore the lost action and the circulation of the fluids, and to restore the nerve force to its normal state, and to bring the powers of life to their native strength and healthfulness.

CONSUMPTION.

CHAPTER II.

THE phenomena of animal life are like an endless chain—so much so that we can hardly tell where it begins. All the animalized secretions of the body are taken from the blood, but two, and they are the chyle and the lymph, and these two constitute the blood to all intents and purposes, except a little oxygen. Hence, we conclude the fountain of life and the mainspring of health lies in the lymph, and the chyle forming organs. These two sets of organs, which terminate in one, and conspire to the formation of the blood, constitute the grand chain and centers of all the organic functions.

My first impressions concerning pulmonary disease were obtained from seven cases, four of which died, and three recovered. Being acquainted with these cases at the time, and the manner in which the three recovered, together with many other circumstances, I have been led to adopt views somewhat at variance with those entertained by the profession at large concerning the cause, manner, course and treatment of this formidable disease.

In order to be more fully understood in what I am about to say, I will state what I understand by a consumptive diathesis, or consumptive conformation. A consumptive

conformation consists in a peculiar and delicate formation of the body, and especially the chest, the chest being of small capacity, a feeble action of the lungs, and a peculiar and delicate formation of the tissues. It is a conformation which is decidedly predisposed against fever; it is a conformation on which all the ordinary causes of disease fail to produce fever. In these formations the nervous system is slow to react against the morbid cause. Hence, a morbid agent or cause of disease sufficient to produce a strong reactive fever on other conformations, would hardly produce any sensible effect on a person of a decidedly consumptive conformation. When a morbid cause falls on a bilious conformation, it kindles a reactive fever directly, which continues until the offending cause is disposed of, or to a fatal termination; whereas, on the consumptive diathesis, the offending cause is allowed to remain unresisted. The system becomes by slow degrees accustomed to this unnatural condition, and the offending cause is allowed to rest on the system like a slow corroding canker, until the powers of life are worn down under this overloaded condition, when digestion fails, the secretions become depraved, and the blood loses its healing principle; then, and not till then, comes a reactive fever, but it is a low hectic, which comes too late to save, and comes like a slow consuming fire.

The consumptive conformation in point of structure, the various organs and tissues, are just as sound and perfect originally as in the opposite diathesis, differing only in this: that in the consumptive the powers of life are slow to act, the organs and tissues are delicately formed, with a feeble power of re-

action, with a cold and languid nervous sensibility.

It is my opinion that the consumption (so called) is not a primary disease, but a sequel or sequence of some foregoing disease; and this foregoing disease is produced by a long continued overloaded condition of the capillary vessels of the bowels and other organs, which induces a low grade of sub-acute inflammation of the secreting organs, the lacteals, mesenteric gland, &c., involving the entire chain of the organic functions and digestion, which is followed by a morbid appetite, depraved condition of assimilation, and a cold and languid condition of the exterior, and the chyloferous absorbents take on or assume a morbid action. And this on these most important and vital organs is in fact the foregoing and original disease before spoken of, and the consumption is only a sequel of this foregoing disease; and this foregoing disease has run its course and terminated before the first true signs of consumption appear. When this inflammatory condition of the mesentery terminates, this termination is by effusion into the cavity of these vessels; hence, it follows that these vessels, and especially the lacteals, become loaded with vitiated matter, at which time there is an unusual coldness about the system. The vitiated matter in the lacteals, passing up the thoracic duct with the chyle into the large vein and heart, mixed with venous blood, but in nowise changed, and from the heart it is thrown directly into the lungs, producing cough, expectoration, &c. These are the first decided signs of phthisis pulmonalis, and the formation of tubercles.

This foregoing disease, slow and insidious in its progress, by contin-

uing for a long time, produces an altered condition of the chyloferous absorbent, and otherwise injures the chyle-forming organs, so that after the acute stage of the disease has passed away the chyle ducts and the chyloferous absorbents have lost their healthy functional action in part, so that they continue to produce and transmit into the blood a vitiated and impure chyle, which vitiated chyle in passing through the lungs, forms a constant cause of irritation, producing cough, expectoration, and all the various other decided signs of pulmonary disease. As this disease becomes more thoroughly understood, it will be found that this tubercular deposit which takes place in the lungs, and sometimes in other organs, comes from a vitiated and depraved chyle, which is produced by an altered condition of the chyle-forming organs, which condition is produced, or is a consequence of, this foregoing disease, state or condition above spoken of.

I have often been astonished to see how long these persons of a consumptive habit will bear up under disease without showing any outward symptoms of ill health, save that peculiar cadaverous paleness of the exterior. In retracing the history of consumptive families, we find many of them live to a very advanced age in the New England States, as was the case with some of my own relatives; yet in these very families nearly one-half of them die between the ages of sixteen and twenty-five, and some of them without ever taking a dose of medicine worth speaking of. Many of these people in the New England States have such a horror of all apothecary drugs, that I verily believe there are many who would rather die than take one dose of calomel, yet they will do that which

is far more dangerous and uncertain.

Somewhere about 1837, a man by the name of Aldredge, who lived in Hamilton, N. Y., where I then resided, had been sick about twenty years, supposed to be with pulmonary phthisis, as he had some of the most prominent signs of that disease. At this time he fell rapidly into a decline, and called in the aid of H. G. Beardsley, M. D., who pronounced the lungs to be sound, for which he was dismissed, and another physician called in, who treated him for consumption, after which he died. A *post mortem* revealed an abscess of the kidneys—the lungs and all other parts being perfectly sound. In reflecting on this case, I thought it very strange that a disease situated so far from the lungs should have so powerful an influence over that organ during life, and yet the lungs be found perfectly healthy after death.

But as time rolled on I saw other cases similar, where chronic affections about the bowels produced a like result. When I returned from Mississippi, a case occurred on a young man by the name of Allen. He had been sick and complaining some time, with very prominent signs of pulmonary disease, and being uncommonly on the decline at this time, H. G. Beardsley, M. D., was called in, when, after mature deliberation he decided that the disease was not consumption, he was again dismissed and another called in to take charge of the patient, with the understanding, however, that if the patient died Dr. B. should have the privilege of a *post mortem* examination. The patient was treated for consumption, and died. I assisted Dr. B. in the *post mortem* examination, the result of

which was as follows: An abscess fully formed in the left lung, and a small one just forming in the right lung, to all appearance of recent formation, with numerous tubercles in both lungs. There was an intus-susception of the left descending colon, of about three inches; this also appeared to be of recent formation. On further examination of the bowels, we found an altered condition of their coats, to all appearance of long standing, but no ulceration, and on examination of the mesentery, the lacteals were found to be injected with a fluid as black as ink, from their termination in the intestine to near the thoracic duct, and the contents of the duct were depraved and vitiated, having lost all their original characteristic qualities of chyle.

Now the question arises in this case, where was the origin of the disease? was it in the chyle-forming organs in connection with digestion; or was it in the lungs? My opinion is, that the origin of the disease was in or about the chyle-forming organs, and the affection of the lungs was a secondary disease, and a sequence of the former.

And now I have something to say about these before-named seven cases:

Case 1st, Dr. E. L.—After being sick about two years, it was decided that his case was one of confirmed consumption, and he left for the South. On his way down he stopped at Shawneetown, Ill. After being there about four months, he took sick with bilious remitting fever of a mild grade. In a few days he was taken suddenly with vomiting and purging, which continued all day in spite of all treatment or attempts to stop it, the dejections being of a dark brown and green, during which time an incre-

dible amount of vitiated matter was flooded off from the system. Although the effect of this was very prostrating, yet after a week or ten days he recovered so as to be able to walk about, and in a few weeks he found to his delight and astonishment that his consumption was fast passing away. And it did finally entirely vanish, so that at the end of a few years he was so perfectly recovered that you would never have known by his looks that he had once been a consumptive. He was of a decidedly consumptive family.

In this case the fever and the extreme vomiting and purging unloaded the capillary and secreting vessels of the bowels and other organs connected with the digestive organs, in such a manner that it gave immediate relief, and then nature being freed of this overloaded condition, of this great amount of vitiated matter which had been locked up in the system for years, operating on the powers of life like a slow corroding canker—but now being freed of this, convalescence was soon established on a firm and healthy basis.

In the other two cases that recovered, of the seven, the same thing happened, that is, they had a little fever, and the system was suddenly disgorged, either spontaneously or by the aid of medicine,* and the same permanent relief followed.

Of the before-named seven cases four died. After their disease became settled they went South to regain their health. They visited the large cities of the great valley of the South-west, but that same cold and languid nervous sensibil-

* We cannot get this effect by Ipecac nor from Antimony; they are too active and depressing.

ity followed them wherever they went.* They contracted no fever—the milder climates failed to arouse the native powers of life. That icy chain which had bound them so long still held them fast; neither the malarial wind, the misty morning fogs, nor the burning sun of a Southern clime, was able to kindle the fires of life anew, and the fell monster, disease, continued on its even course till death.

My convictions concerning this disease were brought about by a careful study of these seven cases; but now I have the history of more than one hundred cases, and all with the same never-varying result. That is to say, the capillary circulation became suddenly disorganised, either spontaneously or by fever, or by the aid of medicine. We find evidences of the same thing oftentimes in the course and progress of typhoid and typhus fevers, as well as other fevers, where the capillaries of the chest and bowels have been for a long time overloaded with vitiated matter. I have oftentimes noticed a cough to set in suddenly, and the lungs to become very much oppressed by an influx of vitiated matter being thrown suddenly on the lungs, and sometimes fever patients get well with a cough, which wears off as the blood becomes free from vitiated and unhealthy matter.

This cough is evidently produced by vitiated matter being transmitted into the blood through the various avenues of its formation, which on reaching the lungs, produces cough, inflammation, &c.

And again, we sometimes find in fevers that there is so much vi-

tiated matter thrown into the blood in this way, that the character of the disease is suddenly changed from a mild to a malignant and fatal grade. And this was oftener the case under the old depleting practice than of late under a more tonic treatment.

The first time I traveled down the Mississippi River, a circumstance happened which illustrates so well the old mode of treating consumption, that I will take the liberty to relate it by the way of comparison. In one sense, a steamboat may be compared to the animal frame. Boats sailing on the turbid waters of the Mississippi experience much difficulty on account of the machinery becoming coated over with a substance which the waters of that river hold in solution. The boilers and pipes become covered with a clay-like substance on their inner side, which accumulates by slow and imperceptible degrees, without any perceptible effect on the boat's engine, until it has accumulated to a thickness sufficient to become a non-conductor of heat, at which time it first becomes a barrier between the heat in the furnace and the water in the boilers, at which time the amount of steam generated begins to lessen, and the motion of the machinery is first noticed to falter or to flag. Inexperienced persons attribute this to low fires;—a little more fire makes the boat move on all right again for a time, but after a while she falters again; the machinery has lost its capacity for heat and its former speed, and it is again attributed to want of fire in the furnace; again the fires are raised to an unusual degree, and the machinery is once more compelled to move on slowly, but after a while it falters again, the ma-

* In order to be benefitted by a change of climate, the patient must become located, and stay there.

chinery grows cold, the boat moves slowly and more slow, until it finally stops in spite of all the increase of fire which can be raised in the furnace.

And now the question came up, what shall be done? One said there was not fire enough, so they went on to raise more fire, but that only burnt out the boilers, and did not make the thing move. They then concluded to try and raise heat with some other kind of wood, but that failed, and after trying a multitude of ways, and all failing, they came very near giving it up for lost, when a new light opened to their minds, or was suggested by one of the party, and that was, that the machinery was too much exposed to the air, and the plan was to roll up the machinery in flannel to keep in the heat, and then to fill the boilers with water already heated to boiling hot, and then by starting a good fire in the furnace, it was thought the old boat would move on. Now this being thought such a capital plan, they all with one accord fell in with it, and they spared neither time nor money to accomplish their object. And after repeated failures they still worked on, sanguine of being in the right, and the longer they worked, the farther they were led astray from the truth, until one day a stranger came along, and seeing what they were doing, said he could tell them how to make the boat go, and that if they would put a bar of soap in each boiler, it would clean out the pipes and cleanse the machine, and then the boat would move on again with all its former speed. Well, they put a bar of soap into each boiler, and sure enough, it cleaned out the pipes and the boilers, throwing the muddy water which had so long encumbered the machine

all out by the escape pipes, and the boat soon moved on with all its native speed. I heard no more about filling the boilers with water already heated, and covering up the machinery to keep in the heat; for after this the entire fabric of machinery maintained a uniform temperature, with heat enough and to spare, through cold weather and hot, wet or dry, always remaining about the same in spite of atmospheric vicissitudes.

Although this circumstance occurred a long time ago, yet it corresponds so completely with the popular mode of treating consumptive diseases, that it taught me a lesson which has led me to examine more closely the pathology of disease. This notion of supplying the machine with water already heated, and covering it up to keep in the heat, is just what has been done in the treatment of consumptives for the last two hundred years, with an increasing mortality all the time, yet they still persevere in this fatal and pernicious manner of treating these diseases.

The children are fed on *hot slops*, they are rolled up, muffled up, and clothed up, until their skins are, as it were, parboiled, and lose all their native elasticity, color and strength, becoming feeble and tender; *the outward attractive force of the fluids is lost, giving to the circulating fluids a tendency to flow towards the center, at which time the central organs are overloaded with a sour, vitiated matter, which accumulates in consequence of a retarded circulation, and is allowed to remain in the system until it is decomposed, and passing off by degrees with the secreted fluids, flowing through the circulation with the animalized juices, poisons the very fountain of life itself.* I have seen cases where the

saliva was composed of nothing but these decomposing fluids and the wasting away of the tissues. The perspiration in these night sweats is composed of the same thing; and this vitiated matter, the deteriorated fluids in process of decomposition, is what causes the hectic fever on these patients, in the same way that heat is generated by the decomposition of metals in a galvanic battery.

Now comes the question, what is the cause of the formation of tubercles in the lungs. Tubercles in the lungs are formed from depraved matter in the blood, which comes from an impure or an imperfectly formed chyle, and when the blood receives oxygen in the lungs, this impure or unhealthy matter is precipitated, being thrown on the lungs, this impurity being inconsistent with the perfect oxygenation of the blood, therefore it is dropped in the lungs, the fluid part of which is expectorated, and the more solid parts, or the albumenous portion, form in concrete globular masses in the cell structure of the lungs, where they harden, forming what we call tubercles.

Sometimes we find abscesses in the lungs to follow surgical operations, wounds, &c., but never tubercles. This tendency to the formation of abscesses after amputations, &c., comes from pus being absorbed and transmitted in the blood, but this tendency to the formation of tubercles comes not from pus, but from a wrong condition, or an imperfectly formed chyle, in consequence of the chyloferous absorbents being in a morbid state; which morbid condition is produced by some foregoing disease, and the *curability of consumption depends on our being able to correct this morbid tendency*. But more especially should

our object be to prevent it from forming. It will be found, as a general thing, that as soon as the formation of the chyle becomes perfect and healthy, the lung symptoms subside, unless disorganization of the tissues of the lungs has already gone too far to admit of healing.

The force of this diseased condition may fall on the mesentery, and tubercles form there, or it may fall on other organs in some other form, as white swelling, rheumatism, fever sore, cancer, osteo-sarcoma, gout, &c., depending entirely on the constitutional conformation, &c., to be more fully explained hereinafter.

The blood receives its oxygen through the skin, and parts with its surplus carbon and a large amount of fluids, by which means its purity is maintained constantly at a healthy point—in this particular the functions of the skin are like the lungs. And when by sudden cold the cutaneous emunctories are closed, this surplus impurity is retained in the blood, which takes effect on the lungs in the same way that vitiated chyle does, but this effect from a cold is only temporary, being relieved as soon as the cutaneous transpiration is again established, which is not the case where the cause arises from depraved or defective chyle.

But all consumptions are ushered into our notice by the *meeting of these two causes—a depraved chyle, which is the foregoing cause, and cold, which is the exciting cause—and although the patient may have been a long time on the decline before, yet it is so slow and imperceptible in its progress that it is seldom thought worth our notice until these two causes meet, at which time the means often used to*

cure the cold aggravates this diseased and debilitated condition of the organic functions. Although the patient may consider himself cured of the first attack, yet after a while he is attacked again, and yet again, every time a little worse, until finally he is compelled to yield to the disease.

Whenever circumstances are favorable for the healthy continuance of the lungs, as, on conformations intermediate between the bilious and the consumptive, then under the influence of these before-named morbid agencies, *the force of this diseased action* falls on other organs or on some other tissue, and the lungs are saved at the expense of some other part of the animal economy; under which circumstances the sequel or sequence of this foregoing morbid state or condition assumes a different form, which form will be according to circumstances, as, a corroding ulcer on the skin, fever sore, osteo-sarcoma, the various grades of rheumatism, diseased joints, white swelling, sore leg with exfoliation of the bone, cancer, insanity, tubes-mesenteria, slow and long continued declining health, &c., all of which are secondary diseases, depending on some foregoing disease or morbid condition, and they are governed by their antecedent, and according to the intensity of this antecedent, the conformation, and the circumstances of the patient, so will the secondary disease be malignant or tractable, curable or incurable, slow in progress, or proceeding rapidly in its course. And all these secondary diseases, after they have arrived to a certain stage in their course, have an attending fever, and this fever is invariably a low hectic. When primary diseases have an attending fever, this fever

is always rapid, or acute, which is never the case in diseases of a secondary character. "Authors agree that fever is an effort of nature to cast off something offensive to its well being," but if this effort fails in its object, then it becomes an agent of disorganization, an instrument destructive to animal life—it may be called a decomposing agent.

Fevers may, for the sake of brevity, be reckoned of three kinds: bilious, typhus and hectic. They arise, or are produced in the following way, or manner, and require the following condition or state of the animal tissues: First, an overloaded or clogged condition of the capillary vessels; and secondly, a closure of the cutaneous exhalants, and suspension of the healthy formation of the various animalized juices, which are required in the economy of nature to the perpetuation of life.

As soon as the above-named conditions are present, and the animalization of the fluids has measurably ceased, and the life force, or *vis vitæ* of nature has lost its controlling power, then this vitiated matter which overloads and distends the capillary vessels in all the organs and tissues, being checked in their course, soon react upon themselves, and begin to decay. When the power of animalization of the fluids stops, its life action ceases, and a cold stage is the inevitable consequence; for as the natural heat of the body is produced by the life force, through and by the various changes of the fluids in the organs and tissues, in the process of the perpetuation of life and continuance of health, so will a cold stage always follow the cessation of this process, and the temperature of the body fall below its natural state, at which time nature being incap-

ble of resisting the force of this condition, is compelled to institute, or to resort to foreign means to save herself, or as it were, to do as the Russians did, burn the city to save the nation; and that is, as soon as the life force ceases sufficiently to establish the cold stage, and the cold stage is fairly established, then the fluids in the capillary vessels and in the various organs take on a chemical action, which peculiar chemical action, like the decomposition of metals on the plates of a galvanic battery, produce heat, which is the reactive fever, which is by this means brought about to counteract against the cold stage, and to drive away the chill. And this chemical action which takes place in obstructed vessels, and in the various organs, has a tendency to produce a disorgement of these vessels and a renewal of a healthy action, and if it fails to accomplish this, or partially fails, the attempt is renewed at some future time, and continues to be renewed at intervals until the offending cause is disposed of, or to a fatal termination. So we find that as soon as the *life force fails* to a certain extent, and that failure has become established, *chemical action sets in*, the consequence of which is a reactive fever on all conformations except the consumptive. The number of hours which elapses from one paroxysm to another, is the measure of the intensity of the disease, inversely, and the intensity of the paroxysm is the measure of the reactive powers of life, which is the strongest in the bilious, and weakest in those of a decidedly consumptive conformation.

In the consumptive, the cold and languid nervous sensibility predisposes them against fever, and as mankind are brought to regard

fever as the only evil to be dreaded in the way of sickness, they are lured into a false security, believing that no one needs medicine who has no fever; hence, on these consumptive conformations the disease is allowed to run its course unheeded, in consequence of which it most generally terminates fatally, for two reasons: first, the treatment is commenced too late; and secondly, the pathology of the disease not being understood, it is wrongly treated.

Although the reactive fever in the forming stage of consumption (so called) is wanting, yet the consumption has an attending fever, but as the consumption is a secondary disease, so is its attending fever a secondary fever, and although it arises from the same chemical laws as other fevers do, yet its effects are decidedly different, for it comes like a slow consuming fire, which, when it has destroyed the animalized fluids, it does not stop as other fevers do, but continues on to the destruction of the organs and tissues, which by slow degrees melt away before its desolating influence.

The more remote causes of consumption are like all other long continued diseases—they have their origin from habits and customs which are detrimental to health. The functional development of the organs of the body depends very much upon our habits of life, food, exercise, and some on climate, for the human constitution comes to maturity earlier in some latitudes than it does in others. And in crowded cities, poorly ventilated, the organs of the human form never do arrive to that state of healthy development which they attain to in rural districts; hence, the population of cities and some

unhealthy locations, degenerate, becoming feeble both in body and mind. Our social enjoyments and happiness depend on the strength and the harmonious development of the organs, and especially the brain and nervous structure; and that the development of the organs depends on our habits of living and exercise. I shall now proceed to show. I shall first endeavor to show that the consumption (so called) is engendered by poor and innutritious living, and imprudent and injudicious training of the youth; and more especially is this the case in the New England States. By the all absorbing influence of fashion and pride, the customs and habits of the Americans are fast losing their native and healthful standard.

The effects of the various kinds of food on animals, sometimes teach us a good lesson. When hogs are fed on corn and the cereal grains, with free exercise, the liver is found to be almost universally sound and healthy, and whenever these hogs are diseased, that disease is very apt to fall on the lungs (or lights, as they are called) but when they are fed on the oily nuts, as acorns, hazel nuts, beech nuts and the like, then the lungs will be found healthy, whereas the liver will be found almost universally diseased; and furthermore, these hogs which are fed exclusively on oily nuts, &c., are very frequently subject to diseases of an epidemic character, and more especially is this the case if they are shut up, and sometimes great numbers of them die suddenly, which is caused by the kind of food they eat.

Many substances which we use as food and as a beverage, do not digest and pass down by the bowels at all, but they pass into the

circulation directly from the stomach. Of this kind is wine, beer, spirits, and some alkalies and acids, while all oily substances, meats, bread, &c., are digested, pass down and enter into the formation of chyle.

"Hence, the substances calculated to support life are divided into two classes: one class goes to support respiration, the other to support the wear and tear and growth of the body."—*Robley Dunglison*.

"Out of the substances which are adapted to the formation of blood are formed all the organs and tissues—the other class of substances in the normal state of health serve to support the process of respiration. The former may be called the plastic elements of nutrition; the latter, the elements of respiration. Among the former we reckon vegetable fibrine, vegetable albumen, vegetable cassine, animal flesh and animal blood. Among the elements of respiration in our food are fat, starch, gum, cane sugar, grape sugar, sugar of milk, beer and spirits. The most recent and exact research have established as a universal fact, to which nothing yet known is opposed, that the nitrogenized constituents of vegetable food have a composition identical with that of the constituents of the blood."—*Leibig's Animal Chemistry*.

Hence, we conclude that health, the perpetuation of life, and the healthy development of the organs depend upon our food and the manner of our living and exercise.

In the old States, and especially in New England, the people eat very little meat or oily substances; the main bulk of their living is composed of bread, fruits, and the various kinds of pastry, sweet-cake, and the like. The acids, alkalies and vegetables predominate over

the animal substances in their living, and here we find the liver almost universally sound, whereas the lungs of those who get sick are almost as universally found to be diseased.

In the new States, where there is little or no fruit and plenty of meat, wild game, and the like, where the people live on hog and hominy, where there is as much wild game as they want, which they can shoot at any time, here ague and bilious affections prevail. As the country becomes more settled and supplied with orchards of the various kinds of fruit, the wild game all gone, and the people use less meat and more fruits and vegetables, these peculiar forms of bilious affections pass away and give place to the typhoid, typhus fever, and consumption.

Thus we find that in a population who subsist mostly on animal food, with little or no vegetables, diseases most generally fall on the liver, stomach and spleen, and in a population who subsist mostly on vegetables, fruits and farinaceous substances, with a scarcity of meats and oily substances, diseases most generally fall on the lungs, bowels, and mesenteric vessels. And this is the reason why cod liver oil has proved so beneficial in the treatment of consumptive persons.

Hence, we find the effect of morbid agencies are generally modified or changed, and sometimes rendered wholly inoperative by our habits of life, food, manner of living, occupation, the kind and quality of food we eat, drinks, &c., and in fact this is just what we should be led to conclude from *apriori* reasoning.

There is no doubt in my estimation, that one of the great predisposing causes of disease on the more

civilized races of the present day, is over-clothing, and living in overheated and badly-ventilated houses. A writer, who I cannot now name, says the rheumatism was never known until after the manufacturing of linen became common; and he attributes the prevalence of that disease to the wearing of that kind of clothing. But the truth is, that that disease, and the consumption, and a host of other diseases, were never known until after the introduction of the more civilized customs among mankind (*i. e.*, what is called fashionable life). Civilization is a great promoter of health, happiness, and of a long life, but that is a different thing from many of our customs, which oftentimes amount to the grossest kind of barbarism, both as to health, happiness and morality. The Santa Fe traders formerly were in the habit of taking consumptives with them to Santa Fe, and they most generally got well after being gone about two years. Some people would call it hard fare to live as they do, and exercise as they do, but that is the very thing that makes them hardy. Their living is composed of meat, coffee, a little corn bread, with sometimes a little flour, but not often. Meat constitutes the greatest portion of their living; and as to light bread, it does not enter into their list of eatables at all. By being constantly exposed to the weather, the skin becomes strong, elastic, and well filled with blood, and capable of withstanding almost any degree of temperature. All the South-western outsiders bring up their children to wear very little clothing, and go bare-footed mostly winter and summer, which produces a hardy skin, solid muscle, and the circulation of the fluids in the ca-

illary vessels is free and full; under which circumstances the central organs are sound, healthy and fully developed, both physically and in functional action, without which there can be no perfect health either of body or mind; for the force of the mind's action depends on the development of the organs, as the brain, &c.

Hence, among these outsiders there are no sickly children; there are no consumptives; there are very few cases of long continued sickness; and with all their ignorance, imprudence and bad management in sickness, there is far less waste of human life, far less time spent in doctoring, and fewer cases of early deaths than there are among the more civilized classes of the North-eastern States.

We do not contend that civilized people need to come down to the standard of these outsiders in order to insure health (far from it), but there is one thing certain, and that is, they must abandon their present habits and manner of living; they must live less in over-heated apartments, the children must be brought up to wear lighter clothing, and go bare-footed more in the summer, they must exercise more in the sun's rays, they must drink less hot slops, eat less hot food, eat less light bread and butter, and eat more meat and garden vegetables.

TREATMENT.

WE now come to the treatment, which is a more simple thing to understand when the true character and pathology of the disease is fully understood, than might *apriori* be supposed.

The first and most important indication to be fulfilled is to obtain

and to maintain a free and equal circulation of the fluids in the capillary vessels throughout the entire fabric, and to maintain a free and unobstructed action of all the secretions, and to preserve and support a healthy action of all the organic functions.

In treating consumptives, the first indication to be fulfilled is to free the circulation from all obstructions or engorgement, and to cleanse the fluids from all unhealthy or vitiated secretions, for which we should use calomel and Dover powder, or calomel, aloes and rhubarb, to be followed by quinine, salicine, the tincture of bark, or some other of the preparations of these barks. But the following medicines should never be used under any circumstances on consumptives: gamboge, jalup, may apple, squills, nor any of the like drastic remedies. They act on these cases more like a poison than like medicine;—they injure the organic functions.

If a person take a cough by a sudden cold, they should treat it by home remedies first—with tea made of upatorium (bonset), the mints, molasses, water and vinegar, ginger tea, or any of the stimulating remedies usually resorted to in such cases in order to re-establish the cutaneous transpiration. If this fail to relieve the cough, and the cough show signs of continuance, or to assume an inveterate form, then they should wait no longer, but should commence immediately on the following treatment, and continue it at intervals until the cough is relieved:

R Calomel - gr. x
Pulvis Doveri gr. iij

Mix, to be divided in three powders, one to be taken every night or every other night on going to

bed, until all are taken, or the desired effect is had, to be followed by castor oil in the morning, or salts and senna, in case they do not operate sufficient of themselves, and quinine, salicine, or the tincture of bark, three or four times a day in small doses. The system, under these circumstances, as a general thing is very sensitive to the effects of calomel, therefore small doses are better than large, but should it fail in its effect, as it sometimes happens in consequence of a torpid state of the nervous sensibility, or from a low state of the vital force, then it will become necessary to use three of these powders in place of one. Beginning in the afternoon at three o'clock, give one at three, one at six, and one at nine o'clock at night, to be followed with quinine, &c., on the next day as before directed.

It must be understood as a general rule, that when calomel is taken, it must always be taken at night, and when it fails to operate on the bowels, it must be followed the next morning by castor oil, salts and senna, or some laxative bitters, in small doses, say one drachm of senna to two drachms of epsom or glauber salts, one-fourth to be taken every three hours until it operates. The calomel powders should be repeated every night, or every other night, according to the effect produced, until they have been taken on three nights, if the desired effect is not obtained before, continuing the tonics all the time, and for a few days afterward. If the patient is not relieved, the same treatment must be repeated in the course of a few days or a week in the same way, and this course of treatment sometimes will have to be repeated three or four times, at intervals of a greater or less time interveping

between, but sometimes once will do, that is, by taking one on three nights, or even less, depending on the effect produced, always continuing the tonics two or three days after the calomel powders are stopped. I sometimes give the quinine clear in grain doses, and sometimes as follows:

R. Quinine Sulphate of - gr. x
Ammonia Muriate of gr. xx
Pulvis Gum Camphor gr. x
Mix divide No. x.

Give one three times a day. I sometimes leave out the camphor and add myrrh, with or without the ammonia.

The following is a very good tonic, where it agrees with the patient.

R. Precip. Ext. of Bark gr. xxx
Quinine Sulphate of - gr. x
Gum Camphor - - gr. xxx
Piperine, - - - gr. xxx

Wet down the camphor with alcohol and work it into the extract of bark, add the piperine pulverized and the quinine, and make forty pills. Where it becomes necessary to continue the tonics long after the calomel is stopped, I have found these pills better than quinine.

Whenever the bowels are weak and slow to act, the following compound may be used, which may obviate the necessity of using purgatives to work off the calomel:

R. Aloes Rhei - - aa ʒi
Zingiber - - - ʒij
Cinnamon, Cloves aa ʒij
Orange Peel - - ʒi
Camomile Flowers ʒij
Whisky - - - Oj

Dose, a tablespoonful three times a day or less often, according to its effect. This may be taken as a laxative after calomel, or it may be taken in teaspoonful doses as a tonic to increase the digestive functions. It may be taken at any time, or un-

der any circumstances almost, but must not be continued but a few days at any one time, on account of its having a tendency to constipate the bowels. Sometimes when calomel operates lightly, one or two seidlitz powders taken along in the forenoon the day after the calomel is taken, will sometimes be sufficient to work off the calomel without taking anything else.

The object is not to over-purge the bowels, but to unload the capillary vessels into the alimentary canal, and then to gently work it off before it has a chance to corrode the coats of the bowels. Calomel is not a purgative, strictly speaking, but it promotes in a decided degree the capillary circulation, and it will sometimes operate on the bowels by its secondary effect.

Calomel, by freeing the capillary vessels, oftentimes fills up the alimentary canal with crude, sour, and vitiated matter thrown out from other organs (the clearing out of obstructions), which, if allowed to remain there, may corrode and injure the coats of the bowels; and therefore, when this does not pass off by the action of the calomel, it must be forced off by other means, in order to save the bowels and tissues from further harm, which should be done in the mildest manner possible, for which purpose castor oil and turpentine, and salts and senna stand at the head. As soon as the calomel has taken effect, and the organs and tissues are unloaded of their more acrid and vitiated contents, and the capillary circulation has become more free from obstructions, the patient will commence using spirits. For this purpose there is nothing equal to old rectified rye and corn whiskey, which should be taken along about ten o'clock A. M. and three or four

o'clock P. M., and sometimes on going to bed, if the patient is not inclined to sleep well at night, in doses of from one-half an ounce to an ounce or more. If this sets coolingly and pleasant on the stomach, continue, but if it flies to the head and disagrees with the stomach, then wait until more of the calomel powders have been taken, after which it will become more agreeable, when it should be commenced again as before directed. Under these circumstances whiskey is slightly stimulating, narcotic,* and in large doses powerfully sedative, which is not the case before calomel has been used to disgorge the over-loaded and distended organs of their vitiated contents.

The first object in treating consumptives is to open and free the capillary circulation, and to maintain it so until the organic functions have assumed a healthy action, which can be accomplished in the following manner: First, open and establish a free and healthy circulation of the fluids in the capillary vessels of all the organs by the action of calomel, quinine or salicine, or some other of the preparations of bark; after which, secondly, support and maintain a free circulation of the fluids, and prevent a re-accumulation of vitiated and unhealthy matter in the capillary vessels or the blood, by forcing the circulation for a time with stimulants (whisky), at the same time

* On a patient where opium and the ordinary remedies had failed to produce sleep for a week, I directed whisky in three-ounce doses every hour. The first dose, however, was sufficient; ten hours of refreshing sleep followed, and a speedy convalescence. There is nothing better to tranquilize the nerves, and to produce sleep on infants, than whisky. If it fails, it is a certain sign that the child needs physic—give one or two grains of

bathe the feet in warm water (medicated sometimes) at night, and the hands, arms, and sometimes the shoulders, in cold water in the morning.

When the circulation in the capillary vessels ceases to be free and healthy, the organic functions cease to be performed in a healthy manner, and these are the functions which are at fault on all these consumptives. And just as soon as you can establish a healthy functional action in the capillaries of the skin, lymphatics, and the chyle-forming organs, so soon all diseases of the lungs will vanish, abscesses and tubercles to the contrary notwithstanding.

In 1844 I treated a case where an abscess formed in the lungs, broke into the bronchial tubes, and he spit up a full pint of purulent matter in twenty-four hours. It continued to discharge freely for three or four days, after which it healed, and in less than two weeks he was able to go to work again as usual, and became just as healthy as before. I have never lost a case under these circumstances but once, and then it was by the imprudence of the patient during convalescence. This foregoing treatment is applicable to all the forms of incipient phthisis, or confirmed consumption, varied to suit the case or the constitution.

calomel at night, see that it operates in the morning, after which, if the child is restless, or fails to sleep, a teaspoonful or more of whisky, according to the age of the child, will have the desired effect, and that too, without destroying the future growth and health of the child, as all the preparations of opium do. One-half of the children of the present age are drugged with opium until their intellects are ruined and their healths destroyed.

HEMORRHAGE FROM THE LUNGS.

This often perplexing and dangerous symptom will never occur on any patient where a judicious treatment has been instituted and pursued from the start; but should it occur, the following treatment will be found effectual as a general thing:

R Calomel - gr. xxv
Plumbi Acetas - gr. iij
Opium pulverized gr. j

Mix, divide in three powders, and give one every hour until the bleeding ceases. If this does not operate in nine or ten hours, give oil or some salts and senna; after which quinine should be given for a day or two.

Hemorrhage occurs from two causes: an obstructed circulation, and a depraved state of the fluids; which circumstances must govern the treatment in a measure. In cases of the latter, the calomel should be used in small doses, increasing the lead and opium, and oftentimes quinine at the same time, which should be continued some time after the others are stopped.

DIARRHEAS.

The diarrheas which are peculiar to consumptives are the most difficult to manage of anything we have to contend with in treating consumptives. They arise from a depraved state of the fluids and an injured state of the tissues, which on the confirmed consumptive indicate an alarming development of the disease, which if not soon modified, is sure to prove fatal, because it invades the most vital and important class of all the organic functions;—hence the treatment must be conducted with care and caution. The treatment may be com-

menced with the following powder :

R Calomel gr. x
 Pulvis Doveri gr. v
 Opium pulverized gr. ij

Mix, divide in x powders, one to be taken three or four times a day, as the case may require, and at the same time Huxham's tincture of bark should be taken three times a day in tablespoonful doses or less, as the case may need. As soon as these first powders have taken effect, if the diarrhœa continues, give the following :

R Quinine Sulph. of gr. x
 Dover Powders gr. v
 Plumbi Acetas gr. xij

Mix, divide in x powders, one to be taken every three or four hours until the diarrhœa becomes measurably checked, after which salicine or quinine should be continued three times a day for a number of days. Sometimes salicine has a better effect in these diarrhœas than quinine, to take it three times a day in doses of three or four grains. A little old whisky is good, and often has a good effect when taken at ten A. M. and three P. M., and sometimes on going to bed.

In diarrhœas under these circumstances great care must be taken not to over tax nature with drugs. It oftentimes becomes necessary to vary or change the treatment. The calomel powders may be repeated a number of times at intervals between. Should the diarrhœa prove inveterate, use the nitric acid drops, blackberry root syrup, hemlock oil, spirits of turpentine—and tolu balsam is often good, a few drops on sugar taken two or three times a day, or with castor oil and laudanum. Whenever an astringent is used to check a diarrhœa, it must not be continued longer than barely to check the bowels; it is very seldom I use them at all, unless on

cases where the diarrhœa is far advanced before treatment is commenced, for it is necessary in treating any disease, and more especially the consumption, to maintain all the secretions in a state of perfect freedom of action. When the bowels are much disordered, as is the case where diarrhœa continues long, white sugar has a good effect. In New Orleans, on convalescents from the cholera, it has been used to some considerable advantage.

COUGH.

Whenever a troublesome cough remains after the foregoing treatment, or inflammation of the throat, gargles should be used two or three times a day; for this purpose Huxham's tincture of bark diluted with water is the best. But there are many other things that will do:—vinegar and water, pepper tea, cold water, sage tea, or common tea, &c. After using these remedies, should there be found any ulceration of the throat that fails to heal, gargle the throat with a solution of lunar caustic of two or three grains to the ounce of water. Should there be found ulceration that cannot be reached in this way, the throat must be cauterized by lunar caustic after the plan of Dr. Green, of New York City. Tolu balsam, turpentine, or hemlock oil, taken on sugar on going to bed, in doses of a few drops, will oftentimes have a salutary effect on the cough.

In the incipient stage of the consumption, and also on convalescents when the patient is not under other special treatment, if there should remain some slight cough, I sometimes use the following with very decided benefit:

R Sanguinaria Canadensis ʒiij
 Coreandrum Semina - ʒiij
 Diluted Alcohol pt. j

Make a tincture. Dose, a teaspoonful three times a day—before breakfast and dinner, and on going to bed. This may be continued according to circumstances—a few days or longer. Sometimes the bitters recommended in the fore part of this treatment, taken in teaspoonful doses in the same way, will help the cough; and if they affect the bowels too much, take them only on going to bed, or stop them entirely for a time.

All the ordinary routine of cough drops or cough mixtures are inadmissible—they are injurious on all these consumptive conformations. It is very seldom there is a cough to amount to anything if the case is properly treated from the beginning; it is only on those cases that have been neglected that any difficulty is to be apprehended from a cough.

BATHING.

Bathing, in the broad sense and meaning of the word, is inadmissible, yet it is oftentimes of great service to bathe the feet in warm water, vinegar, spirits, or the nitromuriatic acid bath on going to bed, and in the morning to bathe the arms, face, neck, and sometimes the shoulders in cold water. But this should be done in a warm room, if the weather is cold, and the water should not be over-cold to begin with;—after a person gets used to it they can use it cold.

FOOD AND DRINKS.

The facts elucidated in the fore part of this chapter, if rightly understood, will be sufficient to guide us right in this particular. There is a great difference in persons as to food and drinks—what will agree

with one, sometimes will not with another. That food should be adopted which agrees best; it should be good, varied, nutritious, and but little of it, that is to say, the patient should eat but little at a time. Invalids always drink too much fluids, which is a great fault with the most of people of late. They should never drink fluids while they eat—one cup at the close of a meal is more than they ought to drink, but that would do if it was a small cup. And of all things, hot drinks are the worst;—a little beer or wine at meal-time is better than tea or coffee, yet there is nothing unhealthy in tea or coffee, except their being drank so hot.

The drinks should consist of beer, wine or cider, whichever agrees best, but none should be used unless it is pure, and that cannot be had of our liquor dealers. You must buy your wine at the home vineyards, or make it yourself, and your beer from the brewers of known repute, or use the home-made beer.

Beef, pork, venison and fowls are what should be generally used. When I speak of pork, I do not mean still-slop fed pork, nor pork fed on dish slops and grease, but good, healthy, corn and grass-fed pork, which is one of the best and healthiest kinds of meat for consumptives to live on, which should be well cooked with onions, summer-savory, &c., and this with turnips, tomatoes, peas, or something of the kind in small quantities, constitute the most nutritious of all combinations of food, and the most easy of digestion, and these should be changed and combined to suit the individual's peculiarities of digestion.*

* I knew a family in Missouri where a man

Nothing will compensate for the meat on the one hand, nor for the garden roots on the other; and just as quick as you leave out either one of these essentials to a healthy living, you are liable to fall into a state of disease. Meat and vegetable roots must compose our constant living, with greens occasionally, and when a plenty of these are to be had, very little bread will be required. And what little bread we need must be ground wheat, corn, barley, oats, or buckwheat; but of all these, barley, buckwheat and oats are decidedly the most healthy.

Consumptives should drink as little fluid as possible—as a general thing in invalids drink too much when they eat.

EXERCISE.

In treating consumptives, as well as all such continued chronic affections, exercise is one of the most important features in the treatment, and without which the patient never can get well. Some light, healthy employment should be instituted, so that they may have something to do every day; and this should be some business not exposing, but that which requires constant changing of posture, and when they become tired they should

and his wife, a boy four years old, and a girl ten years old, eat twenty-two hundred pounds of pork in nine months, besides prairie chickens, venison, wild geese, &c. This is a common occurrence in these States, and if you want to see the effect of meat eating, just go and look at them: they are often six feet high—lean, hard fleshed, hardy pioneers. Their pork is all fed on grass, acorns, hazel and corn, not on still-slop nor grease.

It is a proverbial saying in Western New York, that when they get out of pork they all get sick; so whenever people get sick, the inference is, their pork barrels are out.

lie down. Any business which requires a fixed position long at a time is bad;—cultivating a garden is the best exercise they can have, unless it is to work at some easy trade, like sawing wood over a saw-buck, for a short time every day. But whatever they do should be something that will engage the mind and become interesting; that which can be taken at any time of day at their pleasure, and that which is productive of profit in place of being expensive—this will have some effect on the patient for his good.

GIVING MEDICINES.

In treating all these slow chronic and long continued affections, where the organic functions are involved, the greatest caution is required in the administration of medicine—everything depends on the time and manner of giving medicine, or of adopting remedies. I have a case in point, which illustrates the effect of a little medicine judiciously applied; it occurred in the family of R. W. B—, Saline County, Mo.:

There had been thirteen children—ten of them healthy, and three of them had died under the following circumstances: To all appearance at birth, they were healthy children; of full growth, and in every way natural as far as could be discovered. They never grew any after birth, but on the contrary began to shrivel and decline, and lessened in weight from their birth until they died—nearly a year. The flesh shrunk up, and they pined away and died like some old, decrepid person; they had good medical attention, but all to no effect.

In 1844, another case occurred in

the family. The child was born to all appearance healthy, like the others. About three months afterwards, I was called to see the child, at which time it looked like some decrepid old woman on her death-bed, with a whining sickly cry, and its flesh very much shrivelled up. As all treatment had failed on the others so far, I was some perplexed as to what course to adopt. Life hung on a slender thread. My opinion was that the organic functions were at fault, assimilation and nutrition had not taken place since its birth. All the organs appertaining to nutrition seemed to lie dormant and inoperative. I told the lady I thought that in about three or four weeks in all probability the child would get some fever, and that she should watch the child and when that took place to let me know; I should give the child nothing till then—in the meantime she might nurse it the best she could, and nothing more.

In about two weeks afterwards, sure enough the child had some considerable fever, when I saw it. I gave the child calomel, aloes, and

rhubarb, of each one-fourth of a grain, at night. The next day I directed the tincture of *sanguinaria canadensis* made with two parts of blood root to one of coriander seed. Of this I directed ten drops three times a day, which was continued a week or ten days; and this is all the medicine the child took, and a full and perfect cure was effected, so that at the end of four weeks the child had gained four pounds, and at the end of three months the child was as stout and as healthy as ordinary children are at that age. During the treatment the child had spirits occasionally until convalescence was complete.

I have no doubt that in this case if I had commenced giving medicine hap-hazard, and continued dosing, the child would have died, but by doing as I did I took advantage of a revulsion of nature, and acting with the reactive fever, it had the desired effect; and although I run some risk by waiting so long, yet the result fully compensated by the more decided effect of the remedies when given.

EPIDEMIC CHOLERA.

CHAPTER III.

THE cholera (so called), is one of the most formidable diseases yet known, and one the least understood; we have no clue to its character by its name; we have no authors who can tell us what it is or from whence it springs.

My object now is to inquire what it is, if by any means I can arrive at the truth in the case.

In 1832 I was living in the town of Jordon, New York, when the cholera came there, and a number died within a few days. Finally I was taken myself. Towards morning I felt a dull, heavy, painful sensation about the epigastric region, with some slight cramps, but having had no diarrhoea, I was not alarmed. This continued at inter-

vals until nine o'clock, when suddenly an awful feeling of distress came over me, and I fell down in a spasm. Thus I continued for half an hour or so, during which time I cramped, feeling a sensation as if cold water were falling on my head; after a while I got up and walked across the floor, and fell down again in the same way, with eyes sunk, skin contracted, complexion changed, skin wet and clammy, cold perspiration, and pulse nearly extinct, at which time purging first commenced quite severe, with a rapid failing of the powers of life, which continued about three hours. After this the vital powers began slowly to mend, but the purging continued about twelve hours, after which it ceased, and convalescence continued till health was slowly restored. In a few days after this I saw another case precisely like the above, but in place of terminating in convalescence it terminated in death in about six hours, the diarrhoea being absent in the forming stage.

Now were these cases cholera?

In the cholera of 1832-4, though a majority of the cases were preceded by diarrhoea, yet a great part of them were much like the above, as far as the foregoing diarrhoea is concerned. These cases were preceded by some slight indisposition, a hardness or aching about the stomach and bowels, giddiness at times, nervous restlessness and a fickle appetite, which continued for a number of days or more, when the prostrating attack came on suddenly, after some unusual exposure or over-eating. Under these circumstances these cases terminated in death or convalescence in a very few hours.

In the cases preceded by diarrhoea, the diarrhoea was painless, at

least for some time before the termination.

The first indication of the cholera that came to my knowledge in Missouri, in 1849, occurred in some ague patients. They first had diarrhoea come on suddenly, as the chill came on, after which they had no more until the next chill time, at which time they had a return of it, and died the same night of the cholera. In the course of a few days there were a number of cases of cholera in the neighborhood. Soon after, all the cases along the river were cholera, and this disease spread in the country along the streams, until all the ague and other affections seemed to be merged in this all-prevailing epidemic. Whatever the beginning might be, in whatever form of disease, they all seemed to manifest a strong tendency to terminate in the cholera. After the epidemic became fully developed, all signs of other diseases vanished; and again, when the epidemic began to decline, fevers and agues came in, and as the cholera lessened, they increased, until fevers again became the ruling disease.

In 1849, along the valley of the Mississippi, in May and June, the cholera was generally preceded by diarrhoea, or a watery discharge; in July and August, or as the weather became hot and dryer, the worst cases had no diarrhoea.

The first symptom of the cholera is an irregular, or a confined state of the bowels, which is always the case, to a greater or less extent, as far as my knowledge extends, though generally overlooked by the patient. This is sometimes followed by a watery discharge, during which time the contents of the bowels divide, the fluid portion passing off while the more solid portions remain, indicating a depraved state

of the digestive fluids and a paralyzed condition of the bowels. The patient becomes nervous, easily alarmed, and restless. This state of things may continue for a longer or shorter time, from two days to fourteen, or even longer, according to circumstances, or the conduct of the patient.

During this time the circulation in the bowels is checked, being gorged with blood, by which means assimilation is delayed, and finally suspended, and the diarrhœa continues, and often assumes a frothy, fermenting character.

Meanwhile the fluids of digestion fail by slow degrees, until they fail to be secreted at all, when the juices of the stomach, liver, spleen, and the bowels cease to flow out; the urine is suppressed, and in fact, the entire secreting surface from the stomach to the descending colon ceases to act; digestion and assimilation totally fail; the contents of the stomach become sour, and constant vomiting and purging is the result;—the viscera of the chest and bowels become gorged with blood, the chyle ceases to be formed, and the blood, being cut off from all supplies of chyle or any other fluids, becomes of a tarry consistence, the watery portion passes off through the skin, as well as by exosmosis, and the subcutaneous cellular tissue becomes disorged in the same way. This causes a shrinking of the exterior, which although it appears considerable in some patients, yet the loss of a very small quantity of fluids under these circumstances is sufficient to cause it all. In this disease, as in some others, the bowels are overloaded after vomiting and purging have continued for a number of days. In one case, after vomiting and purging had continued for a long time with-

out abatement, a dose of castor oil, turpentine and laudanum, brought away a hardened mass near three inches long and an inch thick, the centre of which was dry and hard. The patient recovered.

Most cholera patients drink considerable water in the fore part of their sickness. When a healthy person drinks water, it is taken up by the various emunctories of the system and used to supply the waste of the different changes, perspiration, &c. Not so with the cholera patient; for in his case all such action has ceased. All action to and from the bowels and stomach has become suspended; hence, the blood failing to receive its accustomed fluids assumes a tarry consistence and settles towards the center. It no longer flows out to nourish and support the waste of the cutaneous emunctories, while the subcutaneous cellular tissues become disorged through the skin, and, no longer supported by the blood with its accustomed fluids, it collapses, and the exterior shrinks, the skin becomes relaxed, and the moisture of the flesh evaporates through it as it would on the dead subject.

The evacuations in cholera contain no mucus, for the mucous surface is shut up; they contain no bile, for the biliary organs are closed; they contain none of the juices of digestion, for all the organs that supply this fluid have ceased to act—and *these fluids have ceased to be formed*; these organs are paralyzed, and their contents are in a stagnating condition, and they pass rapidly into a state of decomposition, while everything taken into the stomach sours, passing rapidly through the patient; forms the watery discharge, for when the fluids cease to be animalized, chemical

action sets in. As an evidence of the truth of this, when the medicine takes effect, the first sign of convalescence is that the rice-water discharge changes to a dark green or black very offensive discharge. Soon after this, true bile is found in the stools, and the patient is pronounced to be out of danger. Now, it is my opinion that this dark-colored matter that is discharged at the onset of convalescence is mucus, and the various fluids of digestion partly decomposed in consequence of remaining so long locked up in the system; for when the animal fluids stagnate, decomposition follows; and when decomposition passes beyond a certain point, death is inevitable. When the stools become dark and offensive, and true bile is found to pass, the crampings subside, and all the alarming symptoms of cholera vanish; the exterior regains its native heat, and the skin slowly regains its former plumpness.

When the muscle fails to receive that nourishment from the blood which it requires, it is uneasy; it contracts and relaxes, which is the cause of the spasmodic crampings; but as soon as the blood regains its lost action again, imparting life and heat once more to the muscle and system, the spasms return no more.

It will readily be understood how it may happen that when the digestive fluids have lost their solvent principle, the food is no longer retained in a homogeneous mass, but is apt to divide, the solids becoming compact, while the fluid portion becomes sour and passes off in diarrhea, &c., while the capillary circulation of the bowels becomes more and more loaded with vitiated matter as the diarrhea continues.

The evacuations from the bowels lack their peculiar fecal odor, the

dejections from the stomach have no smell or color, the diarrhea is without pain or griping, so is the vomiting; there is no pain, except in the spasms.

The first symptom of the cholera is a torpid condition of the abdominal viscera, depending on a paralyzed condition of the nervous centres, which may continue up to the very moment of the prostrating attack, or it may be followed by diarrhea. But when this torpid condition is followed by diarrhea, the forming stage of cholera is prolonged; and sometimes by a simple treatment, or even a little caution, the disease may be cut off altogether. The cholera has three stages—the forming stage, the stage of excitement, and the stage of collapse; the forming stage is generally long, the stage of excitement varies from thirty minutes to two or three days; the stage of collapse is uncertain, but generally short, and very apt to terminate in death.

This white, watery discharge—a common symptom in the forming stage of cholera—which is often mixed with undigested matter, and often looks like fermenting beer or yeast, is a different thing as a symptom from the true rice water discharge; for while this frothy discharge continues, a simple treatment will cure the diarrhea; but when the true rice water discharge appears in any considerable quantity, it is an alarming symptom, for then the disease soon comes to a close, for this is a symptom of an approaching stage of collapse.

The rice water discharge generally comes on suddenly at the onset, or during the stage of excitement, and is often preceded, and always followed by an alarming degree of prostration and clammy wet skin and perspiration.

This rice water discharge looks like a copious evacuation of water, with just starch enough in it to give it a little opacity, with little floeculi which settle at the bottom, and are plain to be seen through the fluid.

In 1849, around the borders of cholera districts, on the more high and healthy localities, the diarrhea continuing for a longer or shorter time, the evacuations became loaded with reddish matter, which looked like strings and bunches of pounded flesh; and after continuing for an indefinite time, an alarming prostration seized on the patients, and they died suddenly, without showing many of the ordinary signs of cholera; yet I look upon this as one grade of the cholera modified by circumstances. This type of cholera was common in many parts of the interior of New York State.

July, 1849. A lady, after having a painless diarrhea two weeks, sat down to dinner and ate nearly twice her usual amount, and while yet eating, sickened, vomiting and purging followed, and in three hours she was dead.

Another lady, after having diarrhea two weeks, got up and prepared breakfast as usual, and sat down to eat, when vomiting commenced, with extreme purging. In thirty minutes I saw her, when she had vomited and purged eight times, and discharged over two gallons of fluids, &c. Extreme prostration followed, with cramps and cold perspiration, and she became almost pulseless. Although the retching and tenesmus continued, nothing passed her afterwards, either up or down. She recovered in a few days under a mild treatment.

A boy, nine years old, in a family where four deaths by cholera had occurred within a few days, had no signs of diarrhea before the attack.

He came in while I was in the house, and fell down in a spasm with cramps showing all the signs of extreme prostration, having a pale and haggard look, eyes sunk, countenance beginning to shrink, hands and feet cramping, cold perspiration, and pulse failing. Soon after, purging and vomiting began, which only lasted thirty minutes, during which time he passed over a gallon and a half of fluid. After this, nothing passed him up or down, nor did he cramp or have any more spasms; he died in four hours in spite of all treatment. His death was like passing into a tranquil sleep.

The fourth case I shall set down for comparison occurred in July, 1852. The patient was thirty years old, of a good constitution, and had had no diarrhea. About noon he complained of an unusual languidness, during which time the upper eyelids seemed to fall down, the patient having to raise them a number of times with his finger. This all passed off in an hour or two, and he thought no more about it; but on the next day at the same hour, the same thing occurred, which also passed off as before; but on the third day at the same hour an awful feeling of distress came over him; his strength failed, his whole frame became powerless, the skin shrunk, the eyes sunk back, the countenance changed, becoming pale and haggard, the muscles quivered spasmodically, the pulse sank rapidly with cold perspiration. Soon after, the stomach sickened, followed by copious evacuations from the bowels, followed by an alarming degree of prostration. During this time I saw him: he recovered under a mild treatment, although the diarrhea continued slightly on the next day.

The reader will find by compar-

ing these cases with those quoted from the epidemic of 1832, that they are alike, with this difference, that this last came on with paroxysms, periodically, like a remitting fever, and this I attribute to climate, locality, and circumstances.

These cases are laid down as a fair comparison for the two most fatal grades of cholera, with one exception—that is, the periodical paralysis of the eyelids spoken of in the last case. I have only seen three cases where that occurred as a foregoing symptom.

The greatest majority of cases in both epidemics had a preceding diarrhœa; yet all through both epidemics there were cases which had no preceding diarrhœa whenever the weather inclined to be hot and dry.

In all these ague districts the disease assumed more of a periodical character than it did in the non-malarial districts; and more especially was this the case in 1854, when the epidemic was on the decline, so much so that the cholera and paroxysmal fevers were blended together, at which time the cholera and bilious fevers were often mistaken one for the other. Many cases of bilious fever were treated as cholera; for the bilious fever sometimes comes on so nearly like the cholera, that it is very difficult to tell the difference at the onset.

In the treatment of the cholera we must be governed by the circumstances of the case, the state of the weather, and the intensity and grade of the disease, always bearing in mind that a little plain common sense is worth more than all the fictitious theories in the world.

I have used nearly all kinds of treatment, from large doses to small—calomel, opium, camphor, qui-

nine, turpentine, castor oil, the nitric acid mixture, salts, extract of bark, boneset, fomentations, hot whiskey, cold water, &c., till I am perfectly satisfied with them as to the result.

I have used them in Mississippi, Missouri, and on the rivers in Illinois and on the lakes, under many and varied circumstances, and the following is my conclusion as to what I have found to be the safest and most successful mode of treatment:

I commence the treatment with these powders:

R Hydrarg. chlor. mit. ;
 Pulv. ipec. et. opii. aa. gr. iij
 Opii. quiniæ. sulph. aa. gr. j vel. ij
 F. chart. no. iv.

Give one, and repeat as often as it is thrown up. When they are no longer thrown up, then repeat them every half-hour, hour, or two hours, according to the intensity of the symptoms, until they have taken effect, and the character of the stools is changed; then stop, after which I sometimes use the nitric acid mixture:

R Acidi. nitrici.
 Tr. Opii. - aa. f. ʒj
 Aquæ. Camphoræ. f. ʒvj M.

The dose is a tablespoonful occasionally, sometimes adding a little quinine to it.

During this time I use whatever other means the case may require of a simple nature; but I have never seen any good come from rubbing the patient; but there are many simple things which may be done that can do no harm, and may sometimes do good—such as giving mint tea, using hot air, wiping the skin dry when it is wet, or bathing the forehead and breast in cold water. Wine whey, beef tea, or water gruel sweetened with sugar, should be given as soon as convalescence

begins, after which soups are the most appropriate as convalescence proceeds.

When the cholera is decidedly epidemic, all other diseases being lost sight of and merged in this all-prevailing epidemic, then these above-named powders will be found to be the most successful treatment. But when the disease fluctuates, verging towards other diseases, or especially fevers, which is apt to be the case in dry, hot weather, or when the disease is on the decline, then it will be found advantageous to increase the calomel to ten, fifteen, twenty, and sometimes to forty grains at a dose, leaving the other parts of the powder as they were, or to leave the opium out entirely, for I have some doubts if the opium does much good under any circumstances.

In 1854, large doses of calomel were followed by more favorable results than in any previous year, and more especially as the epidemic began to decline. When the disease assumes decidedly an epidemic character, the vital powers sink too fast to bear much medicine; and where there is but little life in the tissues, a large dose of medicine will sometimes act more like a poison than as a medicine, when a small dose might do good.

It is worse than useless to give medicine unless the stomach can dispose of it and throw it into the circulation; hence the most malignant case must be treated with the most caution and the smallest doses of medicine. Castor oil and spirits of turpentine are valuable remedies when used after the powders, the effects are generally good, and sometimes decidedly so—at least it has been so in my hands. White sugar is a very good thing for convalescents from cholera; where it agrees

with the patients, let them eat as much as they want. There is nothing better to rectify the vitiated secretions of the bowels; it is also good in common diarrhea.

In 1852, I used calomel, camphor, opium, and capsicum largely, but the result did not please me; and after mature deliberation and reflection I changed my opinion as to the pathology of the disease, and concluded to use simpler means. At this time, being called to a family of Swedes where a number had died, and three more were sick, two of whom I considered hopeless, and thought they would die any way, I gave them calomel, Dover's powder, each a grain; opium, quinine, each a quarter of a grain; to be repeated as often as thrown up; afterwards every hour or two hours, as the case might need. In the worst case, seven of these powders were taken in the first hour, and only three afterwards, when I put them on Huxham's tincture of bark, and they all got well.

This satisfied me as to the principle, and I have used milder and simpler means, and more directed against inflammation in the bowels since, and the result has been perfectly satisfactory.

The diarrhea which precedes the cholera has no outward fever, and the best way to cure it is to give these same kind of powders every three hours till they take effect; then give quinine, or what is better, Huxham's compound tincture of bark, in tablespoonful doses three or four times a day. If the diarrhea returns, repeat the same treatment, after which we need not fear for the result, and the patient will soon get well and stout.

There is nothing more certain, in my estimation, than that cloriform, narcotics, and all this class

of medicines which injure the nervous sensibility, are pernicious in cholera, and should be used with the greatest caution, more especially after the first signs of convalescence begin. They are good to check the diarrhœa in order to get the effect of other medicines, and that is about all. Hence, all patent medicines called cholera-drops, hot-drops, astringents, &c., together with the entire catalogue of *sure cures*, *preventives*, and the like, are pernicious in cholera, as well as in all diseases bearing the semblance of cholera; and the truth is, they have killed nearly as many in the last epidemic as the disease itself.

In St. Louis, in 1832, '33, '34, as the cholera fluctuated between the true epidemic tendency and other diseases, it afforded a good opportunity to read its true character; and it was the opinion of some of my acquaintances there, that the cholera was a modified or suppressed fever, and had its origin like all other bilious affections, and that it was nothing more nor less than the bilious fever under the all-prevailing influence of an epidemic atmosphere, with an increased amount of malarious exhalations and humidity.

The more I see of it, the more I am convinced of the truth of this view of the subject, for the following reasons:—

1st. Whenever a person at the onset, or at the beginning of ill-health, has taken calomel, so as to thoroughly cleanse the stomach and bowels, and quinine afterwards, he has invariably gone clear of the cholera afterwards.

2dly. The treatment which we find to be the most successful in cholera is precisely that which we use to cure the bilious fever, namely, calomel, quinine, and opium. Add-

ed to this is the fact that, when calomel takes effect to produce bilious stools, the patient is generally pronounced to be safe, after which good nursing, with suitable tonics, is all he requires.

3dly. This very powder, which we find the most successful to cure the diarrhœa and vomiting in cholera, is the very combination (except the quinine) which I have used for ten years in Missouri to cure the vomiting and purging which come at the onset of an attack of bilious fever.

4thly. That in all ague districts the cholera, when not very intense, is very apt to be characterized by, or to be governed somewhat by the type and form of diseases endemic there. Thus in malarial districts it is apt to come on paroxysmally like the ague, and in non-malarial districts it is apt to follow the more continued type, showing plainly that it is governed by the peculiarities of each locality or country, and that it originates from the exhalations of each peculiar locality where it may exist.

5thly. That in St. Louis, in 1849, it changed its locality every time the wind changed, and whenever the wind set strong from the northwest the disease received a severe check, and when it continued to blow from that direction long at a time the cholera disappeared, and fevers came in its place, showing plainly that the disease was governed solely by the temperature, state and condition of the air and humidity.

For the cholera to spread much, the wind must come from an easterly direction, and this wind is always loaded with poisonous exhalations from decomposing vegetation, when the temperature and circumstances are favorable for it.

6thly. That those small-pox patients at the Quarantine Hospital, New York, who took the cholera and died while yet under the full force of the variolus disease, give one good evidence that when a disease assumes an epidemic form, it then becomes the most intense grade of disease. Thence it swallows up all local endemic or minor affections, and as they fall into the overwhelming tide, like a small stream running into a large river, the small current they produce is faintly seen sometimes, but is soon lost in the greater and stronger current. The cholera, like an overwhelming tornado, bends everything to its own course; it is only the most inveterate of other diseases which leave an impression on the face of this devastating malady, and even these are only seen when the cholera has little intensity.

7thly. That there is not a foregoing symptom in cholera that is not common in many of our ordinary endemic diseases; the crampings, vomiting and purging, spasms of the muscles, and shrinking of the skin, are very common occurrences in congestive and bilious fevers, and this brings us to our conclusion, and that is, that the cholera (so called) is produced by the same causes which produce bilious fever, yellow fever, typhus fever, and diarrheas, and is, in fact, a bilious affection governed by an atmospheric distemperature, or an epidemic state of the air and humidity, which condition of the air greatly favors the generation of malarial poison, and is a favorable medium for the propagation and spread of mildews and poisonous vapors. This humid state of the air predisposes against fevers, hence all diseases which would be fevers or common diseases, under a dry

state of the air, by this humidity, surcharged with malaria, will be changed to, or eventuate in diarrhoea, cholera morbus, bilious cholera, &c., and when this state or condition of the atmosphere attains to a certain degree of intensity, as it often does, under certain circumstances, it assumes an epidemic character. This epidemic character, in consequence of humidity, predisposes against fever. Hence, under these circumstances, all diseases will eventuate in, or incline to terminate in, a class of diseases in which fever only comes as a secondary effect, and this train of diseases will be precisely in accordance with the intensity of this epidemic phenomenon and the attending humidity, and will range in accordance with the circumstance, as follows:—

1st. When the atmosphere assumes this condition, it often has the effect to change the type of fevers suddenly from common fevers to a congestive form, in which the reactive fever is lost, or it fails to appear, and the patient is apt to die suddenly.

2dly. To produce epidemic influenza.

3dly. To produce epidemic diarrhoea and dysentery.

4thly. To produce epidemic diarrhoea and cholera, which are the most intense grades of all these affections, and are governed by some peculiar state of the atmosphere which we do not as yet understand, but we call it epidemic.

These peculiar epidemic circumstances, with humidity, may become of an intensity sufficient to produce death with a suddenness equal to the most corrosive poison, as it did on the French troops at Baix, near Naples, in 1528, where it killed twenty-four thousand men in a very

few days.* Those who die under such circumstances never show any outward signs of fever or inflammation, but those who recover at such times have not only fever, but oftentimes have the most intense inflammation of the throat, and sometimes of the lungs, stomach and bowels. The most intense inflammation of the throat I ever treated was that which sometimes follows an attack of cholera.

When death takes place in congestive fever, the patient dies in the chill. There is no fever at the time, simply because the powers of life are swamped at the start, and nature is incapable of resistance, or is unable to bring on the reactive fever, for fever is produced by an effort of nature to throw off something offensive to its well-being. Therefore fever will not appear in any disease where the morbid agents which produced it have at-

tained to an intensity sufficient to prostrate the powers of life at the onset, as is the case in some epidemics; but as soon as the intensity of the cause lessens, the signs of fever appear, and the epidemic is soon changed to a readable, tractable affection, which anybody can understand and manage.

Those who die of the plague, generally die in the chill, or the cold stage, although some die after a partial reaction has taken place, where some signs of fever are seen; so it is with the cholera, and those who recover from these diseases have more or less fever.

I have only one thing more to add at this time, and that is, that in order to pursue this subject farther to advantage, we need some additional information as to the following point—an exact and true history of the morbid changes, condition of the tissues, and the fluids circulating in the mesenteric glands of persons who die of cholera. These points, I think, have been overlooked by pathologists, or at least as far as my knowledge extends.

* See my former Essays on malarial diseases, published in the New York Journal of Medicine, &c., vol. 8, page 64, vol. 9, page 54, and vol. 10, page 74, old series.

THE IMPURITIES OF WATER AND THEIR EFFECTS; AS CONNECTED WITH EPIDEMICS AND ESPECIALLY THE CHOLERA.

CHAPTER IV.

WHATEVER may be the remote or the essential cause of epidemics, and especially of cholera, there is one thing tolerably certain, and that is, that the atmosphere and water are the grand mediums, through and by the agency of which it is brought to bear on, and against, the

powers of life on the human constitution.

Water is capable of holding in solution eighty per cent. of vegetable and foreign matter. How much foreign matter the air is capable of retaining is uncertain, but the quantity of foreign matter it is capable

of holding in a gaseous form is no doubt very great under certain circumstances.

All the vicissitudes, changes, and variations which take place in the air, are instantly followed by corresponding changes in the water. These two elements are very much alike as to the part they play in the rise, progress, and decline of animal as well as vegetable life. Therefore, the study of the one is necessarily blended with a knowledge of the other.

The capacity of water to retain foreign matter in solution, depends very much on the hygrometric state and temperature of the air. In 1849, when the cholera first became epidemic in the Southwestern States, there were various conjectures as to its direct or approximate cause. Some supposing it to be induced by using lime water, others by animalculæ in the air, and others by poison emanating from the ground, &c., &c. The following facts may lead to something of value, or may throw some light on the subject.

The water of springs, wells, and streams, indicated an extreme variability as to purity, from the beginning of the epidemic to its close. Water is, like the atmosphere, subject to changes, and agrees with the state and condition of the air, both as regards its purity and its capacity to hold foreign matter in solution. When the weather is hot and dry, the vegetable impurities in water are thrown both up and down, but mostly down; and on the approach of rainy weather, clouds and storms, the impurities rise from the bottom of ponds, wells, and springs, being re-absorbed, and the water again becomes capable of retaining an increased amount of impurities in

solution. Hence, a stagnant pool of water becomes a perfect barometer, by which we can predict an approaching storm, and also when rain and storms are about to cease, with perfect certainty, some days beforehand. Thus we shall find that a cloudy sky is always preceded by a cloudy state of the water; and the disappearance of this clouded state of the water is a sure forerunner of clear weather. These changes are more decidedly conspicuous in stagnant pools of water, where the water lies in contact with decayed vegetable matter. In long-continued dry, hot weather, the water becomes perfectly clear, and when rain and cloudy weather are about to return, the water assumes an opaque appearance, produced by the rising of the impurities from the bottom. In long-continued dry, hot weather, the water in stagnant pools may become perfectly pure, so that it may be drunk with perfect impunity for any length of time; but as soon as rain sets in, or the weather becomes cloudy, the water will, whenever the circumstances are favorable, become poisonous and unhealthy. And this is the case to a greater or less extent in wells, springs, and streams, or whenever there is vegetable matter in contact with the water, for it to act upon. This is the reason why epidemic diarrheas and dysenteries always prevail the most in wet and rainy seasons—because in wet weather the water is poison, which poison takes effect on the stomach and bowels.

While I lived in Saline County, Mo., in 1845, in order to test some points concerning the purity of water under different circumstances, I drank water from a stagnant pool six weeks, it being very dry, hot weather. The water was clear and

sweet, the taste was good, and it agreed well until the 38th day, during which time my health was never better. On the 38th day I noticed a slight dimness of the water, and something disagreeable in the taste; on the 39th, still more so; on the 40th day, the water showed some signs of being a little riled, and was quite disagreeable in taste; on the 41st day, when I drank of the water it sickened me, as though I had taken a very little ipecac, and on this day the first signs of rain appeared in the sky; and on the 42d day the rain commenced, at which time, when I drank of the water, it came near vomiting me for some little time, and about 10 o'clock I had something like a chill, which lasted two hours and passed off without fever. On the 43d day the rain continued, and the water sickened me more than ever; about 10 o'clock I had a more decided chill, which lasted about two hours, at the end of which time a diarrhoea set in, with more decided signs of vomiting. I became alarmed and stopped drinking the water, and began to take medicine to counteract and to drive away the poisonous effects of the water, which required three or four days to accomplish. I had fever on the two days after the second chill.

The experiment was satisfactory to me, however, and fully convinced me that all the poisonous matter which the water may have contained was on the bottom of the pond, until the air showed signs of an approaching storm and cloudy weather, which was four days from the time the water showed the first signs of an unsettled state till rain began to fall. One of these pools had a wet weather spring which run into it, out of which a family

had used and drank for ten years, and they had been generally healthy. Some logs being accidentally hauled through the pond riled the mud deep from the bottom, which had a very rank and offensive odor; yet the family continued to drink and use the water, and on the third day two of them took the fever, and on the fifth day after using this rily water there was not a well person in the house but a small child, and one of them died,—the fever being of a malignant grade, resembling some grades of typhus.

I have no doubt that this fever was produced by drinking and using this water, it being loaded with poison from the bottom of this pond, which may have been accumulating there for years; for the pool had no outlet for most of the year.

In the Fall of 1846, in the town of Marshall, Saline County, Mo., the same thing occurred, only on a larger scale. They were in the habit of hauling water to drink and use in town, from one of these stagnant pools. While Court was in session, they hauled more than usual,—so much so that the water became very much stirred up from the bottom of the pool.

Towards night this water was drunk very freely about town, especially just before and after supper. Soon after supper, the people began to fall sick with excessive vomiting and purging, and in a few hours there were found to be about seventy persons on the sick list, besides many who were affected in a less degree,—it being nearly all who had drank of this kind of water. In these cases, the water being highly charged with deleterious matter, it took effect suddenly, like an overdose of corrosive poison; and so sudden and alarming were the attacks that the patients actu-

ally believed, at the time, that there had been arsenic put in the water by some unknown person. Although medical aid was at hand, yet many of the patients had fever on the next day, which continued on some for a week or ten days, and some of them remained pale and feeble for many weeks. The time which elapsed from the drinking of the poison-water till fever set in, was twenty-four to forty-eight hours, according to my notes made a few days after the time.

In these cases, had the water been less highly charged with poison, and the effects less sudden, and had sickness followed at some later date, the water would never have been suspected of being the primary cause.

There are many springs that contain so little of this poison, that it is often used for a long time with impunity, yet all at once the water becomes highly charged with poison from some peculiar change in the weather or season, and sickness follows; but they know not from whence it springs. There are many springs in the South-west, the water from which, while the weather is cloudy and rainy, always sickens me when I drink of it, and sometimes it will produce vomiting; yet, while the weather is clear and dry, it has all the taste and appearance of good, and passes for such by those who use it. This kind of water is to be found, more or less, throughout the South-western country, and especially on the lowlands and fertile prairies. The water is affected by the hygrometric state and temperature of the air, and very likely by the electric condition also, and by passing through a very rich soil, with an overgrowth of vegetation, constantly in a state of decay, it ab-

sorbs and carries with it more or less of decomposing vegetable matter, whenever the circumstances of the weather are favorable for it to do so. More especially was this the case in the late epidemic cholera.

As early as May, 1849, I accidentally discovered that there was an unusual amount of impurities in the water of wells, springs, and the streams in Missouri and along the Mississippi River; but I thought little of it until I came to La Salle. On arriving at La Salle, I was very much surprised to find an ounce vial nearly half filled with a cotton-like flocculent substance, after putting into it five grains of lunar caustic. The most of this, as near as I could judge without a chemical test, was vegetable. The water here continued to show an unusual amount of this impurity until the cholera subsided, after which the water in La Salle was found to contain nothing but a little lime and gypsum.

In all the districts which I visited in Mississippi, in '49, while the cholera prevailed to a great extent, the water contained an unusual amount of impurities; but not knowing how much of these impurities it contained in its normal state, these experiments are of no valid use. Precisely so is it with many parts of Missouri, Illinois, and New York, hence I shall only speak of it in La Salle and its surrounding country.

The water of wells, springs, and streams, in La Salle and its surrounding country, showed an increased amount of vegetable impurity, beginning about fourteen days or less, before each annual visitation of the epidemic.

I noticed that whenever the waters had acquired and held in solution a certain amount of foreign

matter, diarrheas and bowel affections set in, and whenever the water had attained to a still higher degree of impurity, the cholera made its appearance; and furthermore, that the grade and intensity of the disease ranged in accordance with the amount of impurity found in the water, and whenever the water dropped this impurity suddenly, the cholera subsided equally as suddenly. So that if this phenomenon shall prove true, and continue to hold good in future with other epidemics of the same class, and under the same circumstances, as it has in this past epidemic cholera, then it will give us a sure and certain rule by which we can judge or tell beforehand when we may expect a visitation of an epidemic of this peculiar class, and also when it is about to subside. I think it will hold true, for in 1855, in May, the impurities in water began to accumulate, and continued to increase for a week, at which time lunar caustic threw down nearly as much impurity as it had at any former visitation of the disease, immediately after which the cholera was reported along the Mississippi River, at St. Louis, Rock Island, and some other places in an endemic form. Bowel affections were common here, and some deaths; and four or five cases resembling cholera occurred here,—brought from the South—of which four died suddenly. At this time the impurities in the water began rapidly to disappear, and in three days they were all gone; after which there was nothing found in the water but a very little lime and gypsum,—impurities common in all hard water, and especially here at La Salle. After this there were no more signs of cholera in all this country, nor has there been up to

this time, nor anything very closely allied to it.

I have kept a record of the weather for twenty years, during which time I have been a close observer of the various kinds and quality of water, for my own amusement; and it is only within the last ten years that I have thought of turning my observations to any useful account. But now it is my opinion that if these observations are followed up, as they ought to be, by medical men, the result will be the discovery of some important, valuable truths.

The most important circumstance concerning the self-purification of water, occurred in the water of the Illinois River, on the 4th, 5th, and 6th days of July, 1851. The wind had blown from an easterly direction for a long time; thermometer ranging from 60 deg. to 86 deg.; the cholera being decidedly epidemic at the time, though a little on the decline. At midnight the wind changed to the South-west. At 4 o'clock in the morning, the ferryman, in attempting to cross the River, found the rope so completely loaded with slime that it took him a long time to clear it so he could cross. At 11 o'clock he informed me that he had then crossed four times, and found the rope loaded with slime every time, to the extent, sometimes, of eight or nine hundred pounds.

On examining the water I found it very much clouded, and appeared to be undergoing a process of self-purification. There was constantly forming in it masses of various colored slime, which collected in strings and bunches, like the slime which sometimes collects on springs of water. It seemed to fall down in the water like snow; it was white, green, gray, and yellow, and

as it lodged on the rope of the ferry, it hung over the rope two and three feet long. The water had a turbid appearance, as though some re-agent had been thrown into it being dark and clouded.

This process continued for three days, at the end of which time the water began to assume its native transparency, soon after which it became perfectly clear, and much more transparent than before. One thing worthy of note is, that the cholera continued up to this time, when it disappeared suddenly, and returned no more that year in the town of La Salle.

It is an universally admitted fact in the South-west, that river water is more healthy to drink than water from wells or springs, and the reason is obvious: the river water, by being exposed to air and solar heat, undergoes a process of purification as above stated. The phenomenon above spoken of was on a larger and more magnificent scale than I ever saw before; because, I suppose, the water held at this time a far greater amount of impurities in solution. This, I think, shows very plainly that this tendency of water to take up and retain in solution an increased amount of foreign matter, is in some way connected or concerned in the propagation of epidemics under certain circumstances, and especially diarrheas and cholera.

Long-continued dry, hot weather will put a stop to cholera with almost as much certainty as heavy rains will put a stop to epidemic fevers at the end of a dry, hot Summer. These two diseases are engendered by the two extremes, although they are both produced by the same invisible poison, or as some say, state of the air; yet they are brought in contact with human

life under different circumstances, hence the effect is made manifest to us in a different form. In one case we get the effect of the poison by the water, which has its effect on the stomach and bowels; in the other case we get it from the air, which takes effect by or through the lungs and skin. Hence, the result of the former will be diarrheas and the like, while the latter will result in a class of diseases denominated fever,—each one being governed by its own peculiar hygrometric state and temperature of the air, and other circumstances. It is very likely that electricity is in some way concerned, or governs in some degree the purity or impurity of water and the air: but how or in what way, we do not as yet understand.

Spring and well water always contain more or less foreign matter or impurities, and the healthfulness of the water depends upon what this impurity consists of, and the quantity it may contain. These impurities generally partake measurably of the soil, vegetation, and the under strata of the ground through which the water flows. Many cold springs are transparent when the water first runs out of the ground, but as soon as it is exposed to warm sunshine it assumes a turbid appearance, or a darker hue, and sometimes it becomes quite milky in appearance. When this is the case the water contains a large quantity of vegetable impurities, and oftentimes of a poisonous character.

A good way to test this kind of water, or any cold water, when there are no other means at hand, is to dip up a glass or pitcher full and let it stand during hot weather. If the water is bad, it will show an increased opacity, and a more dis-

agreeable taste, and after it has stood a few days a greasy-looking scum will be found on the top, and slimy sediment on the bottom, at which time the water becomes clear again as at first, and sometimes more so; and this result will be in proportion to the vegetable impurities contained in the water.

All water has a tendency of itself to throw up and down all foreign vegetable matter when brought together in large bodies, whenever the hygrometric state and temperature of the air is favorable for it to do so.

As a general thing this process of self-purification of water is constantly going on in water as fast as it becomes exposed to the air in warm weather. Hence, some very impure water may pass for good water, because the most of the impurities fall to the bottom, or float off in scum, while the water is standing in the spring or well, before being taken out.

But it seems that under certain circumstances the laws of self-purification of water cease, or are suspended, as was the case in the late

epidemic cholera, and the water retains its impurities, and also acquires an increased power to absorb and retain in solution an increased amount of foreign matter; for the water in all the cholera districts showed an increased amount of impurities as the cholera advanced, and whenever this impurity in the water disappeared, the cholera also vanished at the same time, or soon after.

In 1849, while the cholera was worst in La Salle, the fish died in great numbers along the Illinois River, and the same thing was noticed in some other streams, which shows plainly that the waters of cholera districts at that time contained something unusually unhealthy and poisonous, and that it was in some way connected with the epidemic then common in our country.

And many people who ate of fish taken from these waters at this time, took the cholera soon after and died, of which I could give some decided cases if space would permit.

FOOD, DIETARIES, AND MEDICAL HYGIENE.

CHAPTER V.

THE food most conducive to health is a theme which has attracted the attention of the learned for ages past, but as a general thing with little success towards the adoption of reasonable rules to govern it. I am well convinced that food and diet have a more powerful effect on the human constitution than is generally supposed, so much so that a race of people may become entirely changed in character, constitution, complexion and capacity, both in body and mind, by simply changing their food, habits, and manner of living. It has been so with the Irish. Since they have adopted vegetable eating, living

mostly on potatoes, they have fallen into a decline, losing their nationality, as all those nations ever will who subsist on vegetable roots and herbs. The Celts are a meat-eating people, and although we may sometimes find traces of the Celtic blood in some of the Irish, yet the Irish are not of Celtic origin. The native unmixed Celt has yellow hair, and when the Celtic blood mixes with other races, it becomes a flaxen white, and finally auburn, with various other shades, depending on the line of the races with which they mix. They are tall, broad-shouldered, masculine, light complexion, and decidedly rural in their habits. The purest Celtic blood now to be found is on the Baltic, in Sweden, in the more remote parts of Scotland, Wales, Switzerland, and in the more remote parts of Germany, where the peculiar Celtic form, with light complexion and flaxen hair, is plain to be seen. The true German are of Celtic origin, so are the Scotch, Welsh, and the Swiss; yet the Irish, English, French, and some other of the races, contain a little mixture occasionally of the Celtic blood, but not enough to effect a national characteristic; hence, the American characteristic is decidedly Celtic. According to Logan's Scottish Gaul, the first ever known of the Celt was 3660 years B. C., at which time they were sufficiently powerful to subjugate Asia; after which they emigrated to Europe, where we now find them.

The manners, customs, food and habits of these people who lived on the borders of Europe, were peculiarly adapted to insure a strong mind, permanent health, and a long life. They possessed the strength of nerve, and the unflinching determination of the will which is known

only among those people who subsist upon food in its native and richest state, uncontaminated by second-hand manufacturers. They lived on meat and vegetables; and could we live as they lived, and exercise as they exercised, in connection with the science and refinement of the present time, I think it would insure to us better health, stronger minds, and a greater degree of happiness than they possessed, or than we now possess. But we are fast passing into an extreme the opposite to them in all things, and especially in food and clothing.

The manners and customs of these ancient people are still preserved in some of the more remote parts of Germany, and the highlands of Scotland. The people in these early days lived in the simplest way: they lived by hunting and their flocks, which, together with roots, herbs, wild fruits and berries, honey, and their garden vegetables, formed the sum total of their living. Their common drinks were home-brewed beer, wine, and drinks made of honey, nearly all of which were plenty in those countries; and their wandering habits were constantly bringing them in contact with new and fresh supplies.

Malt beer and whisky were both manufactured by these people at a very early period—so much so that we have no knowledge of the time when malt beer was first made. Whisky was first made from birch bark and some other substance combined, but was never used as a common drink until after the introduction of civilized customs.

These people were accompanied by their herds of sheep and cattle wherever they went; therefore, their pasture was always good, and

they were always well supplied with meats, both wild and tame. And when we compare the food and living of these people with ours at this time, we shall find that their living was far more nutritious and healthy. They dressed lightly, slept on hard beds, and were constantly exposed to the weather. They ate their food mostly cold, drank their home-brewed beer in place of tea and coffee, which gave them good health, a strong mind, long life, and healthy children. Their children grew up with as little trouble as a pig, or any wild animal, simply because their food and exercise was that which nature required. As for the mind—give them the mental culture that we have now, in connection with their living and exercise, and they would have accomplished far more than we do now, circumstances being equal.

But in these later days of science and refinement, it is not polite to be in good health; a person must look delicate, or they are vulgar; they must stay in the house for fear of a dark skin, and feed on starch and hot water, politely called tea, when in fact, of the two, bran is more healthy to live on than starch. They must lace, and wear bandages of pasteboard and cotton; the organic functions must be suppressed at all events till the exterior becomes blanched, and if nature rebels she must be silenced with opiates, and then when all or nearly all the children die, they complain of their hard lot, and call it the wonderful and mysterious providence of God.

So we shall find that the food of these ancient people, so far from being poorer than ours, was actually much more nutritious and substantial, which will be found to be

a fact supported by the latest chemical research. And with all our boasted science in cooking, we have gained nothing, for we have fallen into a routine manner of living—the chief object is to get something that will look nice or fanciful, whether it is good to eat or not. It has been ascertained by the latest chemical research, that roots and herbs, taken singly, are more healthy as food than light bread. Many of these outside barbarians never used bread at all in former times, and they were the most hardy, healthy people in the world.

But it is only within a few years that our living has become so perverted. The food must be eaten hot three times a day, with hot tea and coffee, steaming hot cakes, dishes of all kinds mixed up and all hot, and to this there is no change. The living has become a monotony of changes, all having refined flour for its basis, an article which has been divested of its most healthful constituents,—the phosphates are all taken out in the gray shorts and bran. They cook tolerably well, to be sure, but then it is warmed up and mixed up, and kept steaming hot in place of eating cold, as formerly; and then when the appetite fails, which is certain to be the case under these circumstances, they wash it down with hot tea. A person should never drink at all while eating until near the close of the meal.

They must sleep on downy beds, spend the prime of their days in idleness, their old age in sickness and misery, or die young, and every time they have a pain or an ache, they must have some patent nostrum to swallow down till they are stupefied by its narcotic and poisonous effects, when they lie down to sleep, to get up and go over the

same thing again. And thus they spend their lives in eating innutritious food boiling hot, taking patent medicines (which are made by ignorant, heartless men, to get money with), and going to some celebrated springs to gain that health which they have lost by idleness and fashionable folly.

As soon as we depart from that mode of living which our nature requires, it produces a longing or hankering after things or substances which the blood lacks, or it induces an unnatural appetite for strong drinks, and oftentimes for the most innutritious and unhealthy kinds,—even dirt is often eaten with avidity, and chalk has been eaten till the skin assumed a marble-like appearance.

All craving appetites come from a defective, or an exhausted state of the fluids, and especially the blood. So when our food is defective in vegetable matter, it produces a desire for strong drink, which supplies that for the time, and this is the grand cause or starting point which leads imperceptibly to the most dangerous habits, that is, of drunkenness and other debasing habits, for a defective living produces a defective blood, and a defective blood induces a craving appetite for strong food of some kind, or strong drink.

As an evidence of this, we need only to look over the history of mankind from the earliest ages up to the present time, and we shall find these truths to be a never failing certainty. The Celtic and Germanic tribes were the most ancient people of that race that we have any knowledge of; they lived on beef, pork, mutton, and wild game; their vegetables were very numerous, of which they were very fond, which consisted of roots, herbs,

wild berries, wild fruit and greens, which formed an important item in their common fare. Their beer and wine were of their own manufacture: it was made solely by the women; it was pure and healthy, (not like of late composed of strychnine, logwood, potash, water and whisky) and as long as they held to this custom, they were free from drunkenness and disease, but as soon as they departed from this mode of living, they fell into drunkenness and debauchery, their greatness departed, and they became a feeble, penurious race. See Logan's Scottish Gael.

At this present time, we find an example of the same kind among the French who live in Louisiana; they live mostly on roots, herbs, and vegetables, yet their tables are seldom without meat of some kind, especially mutton, bacon, fowls and the like. Their food is generally well cooked, and of a character decidedly healthy, but it is peculiar to themselves. Their common drink (extra of cold water,) is a good article of claret wine, which they use at meal times, and sometimes during the day. They use coffee sparingly, but seldom use tea. And drunkenness is seldom known among them, that is, among those who adhere strictly to these old customs, for they have no appetite for strong drink—simply because their living contains all that native health requires for the development and formation of every organ and tissue, and the perfecting of the fluids. And these people who live in this way, enjoy a freedom from disease beyond all other people, so much so, that it has become proverbial in the country where they live, that when the yellow fever or any other epidemic disease, sweeps like a devastating fire in and about New Orleans, these people escape the

disease altogether, while death reigns among the balance. It appears that the ordinary causes of disease have no effect on these people under these circumstances, and this we attribute solely to their manner of living, habits of life and exercise, for as soon as they depart from these habits of living, cooking, food and the like, they fall obnoxious to epidemic influence and suffer by all the ordinary affections which may prevail in the country.

And again, we find the same thing fully illustrated in the wine-growing countries of Europe. In this land of vineyards, the manners and customs of the people are decidedly original, especially in the rural districts: here the people are well supplied with the rich produce of their gardens—there is no scarcity of fruit, or any of the strictly essentials to a healthy fare. And then, their extra drink is pure wine of their own manufacture—it is not made of poison drugs like ours, but is pure and unadulterated—and in the spring of the year, when there is little or no vegetable food, this wine supplies that vegetable property to the blood which it requires in order to the preservation of health and the maintenance of strength and a healthy condition of the fluids. The effect of this is, that among these people there is no drunkenness, no hankering after spirits, there is no unnatural appetite to lead to excess, and they are exempt from a certain class of demoralizing habits which we find among people who live under a different or the opposite circumstance. And then, when we come to look for health among these people, we find them decidedly more healthy in every particular, *and especially the females*. The female portion of community among these

people, suffer far less by female diseases than any class of females in the world; hence, their children are healthy, and generally free from disease, and their confinements are easy, and attended with little or no danger.

The Indians make no use of wine or beer, nor any vegetable drinks; they live on meat and roast corn, with what few roots and herbs they collect without cultivation; they seldom use milk. Their living is one continued monotony of meat and roast corn, with what little wild fruit they pick up by the way, and then, behold the effect it has on their health, prosperity and happiness. Of all the children born among them, four out of every five die under one year; nearly one-half of the balance die under fifteen years of age, and the balance, which is a little over one-tenth, generally live to ordinary old age unless destroyed by epidemic diseases.

Thus we find that of all the children born among them, hardly one tenth attain to adult age, the consequence of which is, their numbers lessen every year, and in a few years there will be no one left to tell the melancholy story of their race. Their food is so defective that the appetites are uncontrollable, so that if they could get whisky with as much facility as we can, in a few years they would become a nation of besotted drunkards, and this we attribute solely to their manner of living, food, &c.; they have not the power to control the appetite under these circumstances.*

*There is a tribe of Indians who live in the Rocky Mountains. They are called Digger Indians because they live on roots. They eat no meat at all, but subsist on roots and herbs. They are the only human beings who subsist solely on roots and herbs, and they are the most wretched people I ever saw, being nearly without teeth,

Hence, we arrive at the following conclusions, and these are: that man is so constituted that he must have a varied living; his diet must consist of meat and vegetable food, and some kind of vegetable drink is necessary to use in the season of the year when there is no fruit to be had, which is in the spring and fore part of the summer. We can live on animal food, or on vegetable food by itself, but when we have done so, we are no longer healthy, we become sickly and degenerate, every generation becomes weaker and more feeble, and we know not the cause; the mind droops, the faculties become languid, health fails, our happiness is gone, a feebleness steals over us, and our children die young, for food and diet affect children far more decidedly than it does grown people. Armies of promising children have been consigned to an early grave for the want of something better to eat than bread and butter, for something more congenial to the growing and the developing organs than bread made of fine bolted flour which has been divested of one of the most essential parts which the wheat contains, namely, the phosphates.

It is a hobby story of late that "bread is the staff of life," therefore, bread and butter constitute the sum total of all we need to live on, unless it is about a quart of boiling hot tea, or some other innutritious, and drugged stuff, to take hot every time we eat. The truth is, all our

without strength, deformed, helpless and unhappy. And this is the inevitable result of living exclusively on roots and vegetables. They live in caves, holes dug in the ground, or hollow trees, and seldom live to be over thirty years old. Yet you take one of these while young, and give them meat as we use it, and when they are grown you would hardly know they belonged to the same race.

civilized races drink too much fluid at all times and especially while eating. A person should never drink while eating at all until near the close of the meal, for it dilutes and weakens the fluids of digestion and injures digestion. The early inhabitants of the borders of Europe, never used bread made of fine flour at all, until about the time, or after the invasion of Briton by Julius Cæsar, and even now in many of these more remote districts, bread such as we use is unknown, and there never was a more healthy, hardy race of people lived than they. Many of these border tribes even to this day continue to live solely on meat, cabbage, roots, fruit, and greens, and a doctor could not get a living among a population of ten thousand of these people. And when these people are educated, they make the brightest men in the world. It has become a theme of late with learned men and fools, to extol the superlative qualities of bread and butter; their only aim seems to be to get the most concentrated food, which is a gross error, which any one may see who understands the true science of life. Fashion discards the most healthy portion of our food, and takes as a substitute indigestible and innutritious substances. However it is not always that the most nutritious substances are the most conducive to health, for health requires substances to supply the waste of the system as well as to nourish and support the tissues.

The only way to arrive at any truthful conclusion on these points is by comparing the effects of the different modes of living as practiced by different nations and tribes of the human race.

Go to England and see how they are, and what they live on, with

roast beef, wine, beer, vegetables, fruit and the like, and then see what they are; the health, the activity, and the force of the mind. Go to Germany, where the people make their own wine, cultivate all manner of vegetables in the greatest perfection, with an abundance of all the various kinds of food that health requires, and you will find almost universal health prevails. Then go to Ireland and see what they live on, potatoes, nothing but potatoes, and then see what they are. Visit Mexico where they feed on food far inferior to what we feed to our horses, often times nothing but roast corn and milk, and what are they? They are fit for nothing but slaves, which in truth they are, and always will be while their customs remain as they are. Then visit Africa, where the people live on snakes, snails, with some vegetables, sometimes eating dirt, and then compare the condition of the people and we shall find that the moral condition, the character and the effective capacity of the mind ranges on a level with their habits and manner of living, and the kind and quality of the food they eat, and this principle holds good with every nation and race of people on the face of the globe. The brain, nerve, and muscle, are formed from what we eat; there is no way to get away from that.

But the most pernicious of all things to health, and especially to the young is, this fashionable way of living on hot slops, hot food, over clothing, and living in over heated apartments in idleness. Nothing will compensate for a healthful exercise, without which the mind inevitably droops; all literary men should have some regular muscular exercise every day, where the mind and body can exercise together,

and this should be in the morning. When this is attended to, we shall be less cursed with an over-stock of insane, literary productions, the offspring of a diseased imagination, both in medicine and in other branches of science. God never intended man to sleep his days away in a state of inaction; therefore, whoever does so, must pay the penalty, which is an unhappy state of the mind, disease, wretchedness and death in every case.

Bread made of fine flour is certainly not healthy, and when you take this kind of bread, butter and hot slop, leaving out all vegetables and meats, it forms a diet much more unhealthy than to live on roots exclusively. But when the wheat is ground all together with only the bran taken out, then it makes healthy bread, but even then it does not make a healthy living alone by itself. It is found by the most exact research, that the food most adapted to our nature is the plain, simple productions of the earth, *uncontaminated by the second-hand manufacturer*, and this should be cooked well, and prepared in the most simple manner.

The Creator has designedly so arranged it, that nature abundantly furnishes us with the kind of food precisely adapted to our nature cheaper than any other. The greatest difficulty we have to contend with, is adulteration by the second-hand manufacturers, and this has become a wholesale business, so that it is almost impossible to get a pure article of food, and oftentimes this adulteration is made by adding the most gross and corrosive poisons.

Whenever we depart from a mode of living which is natural and healthy, we are apt to fall into bad habits, for I believe that all drunkenness is measurably induced by a

departure from a healthy standard of living, improper and innutritious food and bad cooking, which produces an unnatural appetite, creates a vitiated taste and a craving appetite for innutritious substances or strong drink, and the only way we can eradicate these evil tendencies is, to fall back upon first principles, and make our living what our nature requires, that is to say, that our food should be plain, simple, of a good quality and well cooked. And furthermore, the breakfast and supper should be the two main, or principal meals, the dinner being more light, for the supper being eaten after the days work is done, it has twelve hours to digest in, whereas the other meals have only six; therefore, the supper should be the fullest and heartiest meal of the three. There is nothing in nature so injurious to health as to eat heartily, and then work hard or exercise freely immediately afterwards, neither man nor animals can do it and live healthy long at a time. The New England habit of eating supper at five o'clock is exceedingly pernicious to health; they eat three meals in ten hours, and then go fourteen hours without eating anything, and those fourteen hours are in the very time when the vital powers of life are capable of digesting faster and more than any other time in the twenty-four hours, and when we consider the perniciousness of these habits, which have so long been pertinaciously followed, it is no wonder they dwindle and die by consumption, for after continuing such habits for a long time, the process of digestion has become so much injured and diseased, that it is no wonder that it should happen as they say, that when they eat at night they get the nightmare and can't sleep; but let

them drop these pernicious and injurious habits by degrees, and they will soon find that they will have no trouble about sleeping or working either.*

The four following lines are from Logan's Scottish Gael:

The free born Statesman stood.
Old was his mutton, and his claret good;
"Drink Port" the English legislature cried,
He drank the poison and his spirit died.

The introduction of foreign wine and spirits among these people was attended with the most lamentable and pernicious consequences; it destroyed health, made them drunkards, and drained the country of money, besides encouraging idleness and bad habits.

These imported liquors are very apt to be impure, being adulterated with poisonous drugs, and since chemistry has become more fully understood these liquors are made wholly of poisonous drugs combined with various unhealthy compounds, while their home-brewed beer, or claret, as they sometimes called it, was pure, being free from poisonous compounds. For these ancient people were governed by very stringent laws concerning the manufacturing of beer as early as we have any knowledge of them. To make bad ale was punishable by fine and imprisonment. See Logan's Scottish Gael.

Yet in these latter days of science and arts, as they say, an age of enlightened civilization, we allow people to sell drugged liquors, adulterated wine and brandy, reducing it and adding poisonous drugs, and to make all manner of liquors of poisonous drugs, and to sell these without *let or hindrance* to an unsus-

*The custom of eating three meals a day is of very modern date; and even at this day many of these races, Scots and Germans only eat twice a day, the main meal being the supper.

pecting community, to the destruction of health, happiness and the well being and prosperity of community, to taint, corrupt and demoralize society. But then you must say nothing about that, says the second hand manufacturer, for by this craft we have our living; and so it is allowed to go on, and they get rich by it, while the buyers drink the poison, and pay out their money for that which destroys health, and they suffer and die, still refusing to sanction a law to prohibit the spurious sale.

From these early days up to the present time, these races who now inhabit Briton and Germany have lived under the most stringent laws concerning the manufacture of malt liquors, and these laws have been enforced to the very letter. And the only way we can ever do any thing here, is to enact laws to govern the manufacturing of beer, wine and spirits, and make it a penal offence to adulterate, or to manufacture a spurious article; until this is done the community is not safe, nor ever can be while the advanced state of chemical knowledge affords such facilities to the manufacture of these spurious drinks.

As for tea and coffee I have not much to say, sometimes they are good, and sometimes they are not, but this business of drinking it boiling hot and a quart at a time is certainly pernicious—but beer, home made wine or cider, with cold water, is much better to drink at meal times than tea or coffee. The following is a very good substitute for tea and coffee :

R	Take of brown sugar	10 lb
	Molasses	1 qt
	Lees of Malt Beer	2 "
	Tartaric Acid	8 oz
	Brewer or baker's yeast	$\frac{1}{2}$ pt
	Water	15 gal

Dissolve the ingredients in the water and let it stand in a temperature of about 70 Fahrenheit, until it has done working. This will keep six months tolerably sweet, and at the end of eight months it makes the best of vinegar.

As soon as we depart from that principle of living and acting which gives us strength and prosperity, that moment we begin to decline both in health and moral energy, and as soon as a people fall into a decline, plagues and epidemic diseases fall upon them. It has been so, even from the earliest history of mankind, that whenever a people attempted to subsist on poor and innutritious food, that epidemic typhus fever, plagues or other diseases have been, and ever will be, a constant attendant after such circumstances.

This was the case in Ireland a few years ago, when the typhus fever destroyed so many of the inhabitants. They undertook to live on food which was not sufficient for health, the consequence of which was, that when the weather and season became favorable for epidemics, they nearly all died in some districts.

These insidious causes of disease which operate against the powers of life have no sensible effect in a healthy season, but whenever the atmosphere assumes an epidemic tendency, then these slow and invisible agencies which have been slowly undermining the constitutional powers of life, are brought to bear on and against the powers of life suddenly, and that, too, without the possibility of escape.

It is a melancholy thing to see the degenerating tendency of the present race, not only the adults, but to see even young children with decayed teeth, spine diseases,

nervous affections, and a host of other diseases, too numerous to mention, eight-tenths of which were hardly known sixty years

ago, and which are the legitimate offspring of what people call the latest and most approved fashion.

THE DEVELOPMENT OF THE HUMAN MIND.

CHAPTER VI.

It is by the agency of the capillary vessels that all the organic functions are performed—the functions of these vessels comprise the grand elements of growth and decay—hence, my first object will be to show by some tangible illustrations the various morbid conditions which these vessels are liable to assume under certain circumstances.

In 1836 I had an attack of what folks called the rheumatism, but in fact it was produced by using mercurial ointment to cure the itch five years before. This affection occupied the ankle and knee, sometimes on one, and sometimes on the other. It troubled me for a number of years so severely I could hardly get about, during which time I used a liniment composed of ammonia and turpentine, but all to no effect. I stopped all treatment, except cold water at times, and I got some better, and two years after using this liniment, while getting well of a fever in Mississippi, I could smell the turpentine every time I bathed my feet in warm water, and the perspiration flowing out of the skin where the liniment had been applied, was loaded with the turpentine liniment which had been rubbed on the parts two years before, after which my so-called rheumatism vanished, and I have

had none of it of account since.

It seems that this liniment was absorbed by the capillary vessels until they were full, the vital force being feeble, with a paralyzed nervous sensibility; it remained there two years, after which, the vital force being restored, it was thrown off, and the parts regained their native elasticity and strength.

That the capillary vessels can remain dormant for two years and even hold a foreign substance within their calibre, of so diffusible a nature as turpentine is, is a strange thing, but this case puts the question beyond a doubt, for so it was, and this seems to militate against the doctrine of *endosmosis*.

My opinion is, that in this case the capillary vessels throughout the system were more or less in a paralyzed condition, produced by some imperfection in the blood, or an imperfect elaboration of the fluids, and that the rheumatism was an accidental circumstance brought about by this peculiar morbid tendency.

Again: Jesse Witter, of New Philadelphia, Ohio, when nine years old, fell from a horse backwards, and struck the small of his back on a stone, after which his legs never grew any more. He is now (1840) over fifty years old, and healthy

and stout, all but his lower extremities, which are of the size of a boy nine years old. The flesh looks quite solid and a little reddish—he cannot use them nor straighten them, otherwise he feels well as any other person. I can adduce many other similar cases, but these are sufficient for my present purpose.

Here we have a case where the flesh has held its own, neither increasing nor diminishing, for more than forty years. There is just vitality enough remaining in the flesh to hold the parts where they are. In this case nutrition is totally suspended; so is absorption; there is no growth and no decay, and yet life remains in the parts. Here we find a case where the powers of growth and decay are equally suspended, or paralyzed, with just vitality enough left to save the parts from decay; and that this state may continue during a person's lifetime, is proved by the foregoing case, and many more which I could furnish if it was necessary, under which circumstances the tissues are never regenerated, that is, there is no renewal of substance while this state may continue, and but very little absorption or wasting away of the tissues, but they become more compact, and acquire a more solid consistency.

The flesh is capable of sensation, and continues to receive and transmit impressions; it feels cold, heat, the effect of wet and dry in a feeble and morbid degree, and although the nervous power is nearly paralyzed, yet there is a peculiar morbid sensibility about the parts which render them peculiarly sensitive under certain circumstances. The reactive powers of life are too feeble to support fever, and yet it has vitality sufficient to save from decay; the development of the parts

has been arrested, and the functional power of the organs is destroyed; all the organic functions have become suspended.

It is my opinion that this condition may become fixed, not only on the extremities of the body, but that it may happen on important organs in the animal economy, and should it happen on the liver, lungs, or on any portion of the alimentary canal, it could not continue long, for it would soon terminate in death by engendering other diseases; but should it happen on the brain, I think it may continue during a long lifetime, or until death occurred from some other cause; but in such a case, what will be the consequence? In my opinion the consequence will be insanity, and this is the only cause which is capable of producing insanity, and the insanity will be partial or complete accordingly as the brain may be partially or completely involved in this peculiarly morbid condition.

The functional action of the brain is a unity, therefore the loss of a portion of its substance will not materially affect the mind. Although common acute diseases may affect the mind, injure the memory, or produce delirium for a while, yet they never produce a settled insanity as a primary effect, for insanity is a secondary disease, a sequel of some foregoing disease or morbid condition. Sometimes a simple disease may terminate in a state of insanity, and often by neglect or bad treatment; but when it does so, all apparent signs of an acute disease have vanished and leave no trace behind, at least in a majority of cases.

We are called to witness diseases of the brain almost daily in our practice, inflammation, wounds, softening of its substance, &c., yet none

of these produce a settled insanity as a primary effect, yet insanity is produced by a diseased condition of the brain, and the nerves which communicate with the brain.

The brain of an insane person may sometimes, and generally is, more compact, lessening in bulk, as is oftentimes indicated by a shrinking of the bones of the cranium, which is plain to be seen during life, yet the structure of the brain remains entire; and although the nerve force is so far paralyzed as to act nearly independent of the will, yet it is capable of acting, and sometimes with considerable force, for these people are often very shrewd in argument, and sometimes use tolerably good reasoning while you can engage their attention, especially if it happens to be on some favorite subject that does not touch their hallucination.

In the case of Jesse Witter, whose lower extremities have remained the same for more than forty years, neither increasing nor diminishing, yet the flesh is susceptible of receiving impressions in a morbid degree, and so it is with the brain of the insane. The brain of the sane person is capable of receiving impressions with much more facility and precision than any other known structure, but in order for the brain to act with certainty and effect, it requires a perfect state of health.

In consequence of some foregoing disease, under certain circumstances the capillary circulation in the brain becomes suddenly checked, the nerve force being paralyzed, nutrition is suspended, the blood fails to supply and to nourish the brain, and all the organic functions in the brain suddenly cease, after which the individual becomes incapable of ever learning anything more while this condition contin-

ues. The mind constantly dwells on the scenes of the past, the impressions which are already indelibly fixed on the tables of the brain remain, yet this knowledge is so mystified by false and morbid conceptions that it only serves to perplex and bewilder.

But should the brain regain its lost action once more, and the healthy blood once more swell the brain, which is sometimes the case, with the re-establishment of the lost or suspended functions of nutrition, and the vital force once more assume complete control, then the individual awakes as from a dream, and the will again controls the mind's action, and this gives us a clue to the mind's action as connected with matter.

And hence we find that there are three distinct identities, or independent powers which govern or constitute in part the mind independent of the animal organs, impressions or emotions which stimulate to action, the will, and the invisible essence of the mind, and these powers may be perverted, crippled or dethroned by a diseased condition of the animal fluids, organs and tissues, and especially the brain under certain circumstances.

The brain requires nearly twice the amount of blood in healthy action of any other organ in the body of the size; and this is the grand center of thought, and just as long as the brain receives a full supply of healthy blood, with an unimpaired nutrition in that organ, so long the mind will be perfect in its action and harmonious. But as soon as nutrition ceases in the brain by defective blood, or a partial paralysis of certain antagonizing nervous ramifications, it loses its power of conduction, or at least it becomes a bad conductor, and loses its ca-

capacity of correctly transmitting or of receiving and appreciating impressions, or answering truly to the mandates of the will, and the control of the mind is lost. For the brain has lost the power of conduction and appreciation; then, though it still receives impressions, yet these impressions are not translated; the brain is incapable of holding these impressions long enough for the mind to act on them, therefore you may talk to a lunatic all day, and he will hear you and understand you, but in two minutes after you stop talking to him there is not a trace of an impression left on his mind concerning what has been told him, and he will brood over something that he had learned or enacted years before; for under such circumstances the mind constantly dwells on the scenes of the past. The brain, under these circumstances, retains former impressions, which are constantly before the mind, and especially those that have most affected their interest or welfare, and these, in the absence of all present appreciations, shine up from the deep recesses of the mind—they are constantly in view, simply because all new impressions cannot be retained on the tables of the brain.

Thus, the difference between the sane and the insane, is, the brain of the sane person is impressible, and that impression is indelible, whereas, the brain of the insane person, although it is sensible to impressions, yet these impressions leave no trace behind, at least of a tangible character, so that when a person recovers from a paroxysm of insanity, he cannot recall to his recollection circumstances which may have transpired during his paroxysm of insanity.

All impressions which are receiv-

ed, understood and appreciated by the action of a healthy brain, are capable of being recalled to the mind's recollection in after years, either by parallel circumstances, or some similar events which may be brought before the mind in a way that will bring the impressions of the past again to the mind, which is not the case concerning impressions received during a paroxysm of insanity, and is an evidence that the insanity is produced by a morbid condition of the brain, nerves, and the fluids.

The phenomenon of the mind's action may be compared to the electric telegraph. The operator is the immediate cause of action, which is represented by impressions received from things and surrounding circumstances; the wires and the machine represent the nerves and the organs of the body, the paper represents the tables of the brain, and the magnet the invisible essence of the mind. The operator strikes the wires, and the effect is transmitted to the machine, whereby the aid of another operator it takes effect on the paper, and this second operator represents the human will. And should it happen that a piece of coal or glass intervene between the conducting wires and the machine where lies the paper, you may apply the magnet as long as you please, but there will be no impression left on the paper; or if the paper has become unimpressible, or in any way incapable of receiving true and correct impressions, then your chain of communication is lost or broken, so that it cannot be intelligently read and understood;—and so it is with the intellectual phenomenon of the human mind.

External impressions being the great stimulating cause of our ac-

tions or emotions, which fall on the nerve expansions, the eye, the ear, skin, &c., of the body, the effect of which vibrates on the brain, transmitted there by the nerves, which are the conductors, like the telegraph wires, when by the force of the will the mind acts, and the impressions are written correctly and indelibly on the brain.

So the power and the force of the mind's action as connected with matter, depends on the capacity of the brain to harmonize, or the facility of it to act in unison with the mind in perceiving, acknowledging, or appreciating the facts or impressions transmitted to the brain by the world, objects, and circumstances.

So we shall find that whenever it shall happen that the brain has lost its elastic impressibility, or it has lost its sensibility to impression, or it has become a non-conductor, or shall assume a morbid sensibility from a depraved state of the fluids, so that the brain becomes incapable of acting in harmony with the will impelled by circumstances, then the will has lost its controlling influence, and insanity follows, simply because the brain cannot act up to the impulses of the will and understanding; for the brain is the medium by which the mind makes its action manifest to the world and surrounding objects.

Impressions arise or are received both from internal and external circumstances, internally from bodily condition, as, from the reflux functions of the organs; and externally, from objects and surrounding circumstances; and the effect depends on the state of the organs and tissues through which the action of the mind is effected.

Hence we find that the brain and the condition of the nerves, the

state of the fluids, and especially the blood, if free and healthy, the action of the mind is perfect and true.

But whenever the nerves shall become non-conductors, that is, incapable of transmitting impressions correctly to the brain, or the brain itself shall become a non-conductor, whereby it loses its impressibility, thus becoming incapable of retaining impressions, or as we say, appreciating them, then the mind's action is perverted, the will no longer controls its action, and it will remain so until this condition of the brain and nerves is removed, and no longer.

Impressions fall on the nervous expansions, the vibration of which reaches the brain, but without the sanction of the will it has no effect, because the mind fails to act on the intelligence imparted, or it does not sanction it; but as soon as the will has acquiesced or sanctioned it, the mind acts, and the impressions are fixed indelibly on the brain, for *by the force of the will* the nerves, brain, and the mind are brought to act as a unity, without which there is no correctness in the mind's action, and without which nothing can be fixed in the memory. Hence, we find that the mind's action is a unity, and the functions of the brain are a unity. See Chron. Thermal System of Medicine, by Samuel Dickson, M. D., of London.

The development and expansibility of the mind depend much on the reflux functions of the organs, of which there are two, the condition of which has a powerful influence on the mind, the brain as a primary, and the organs of generation as a secondary, the reflux functional development of which arrive at maturity between the ages of twelve and eighteen, at which

time the human mind suddenly acquires an unusual degree of elasticity and expansibility, and portrays in a decided manner the individual's future character.

Hence, the mind's action depends on the healthy state of the brain, nerves, and the fluids, for as the brain is the medium through and by which the mind's action is made manifest, it follows that sanity or insanity of the mind depends on three conditions, which are all independent of the essential principles of the mind, that is to say, insanity is produced by a diseased condition—1st, of the fluids; 2dly, of the brain and nerves; and 3dly, of other organs; the effect of which produces insanity. And this effect which produces settled insanity is an injury done to the brain and nerves, whereby the conductibility and impressibility of these organs are injured or paralyzed, in which case *nutrition* and *absorption* are checked or suspended in the brain. So long as nutrition and absorption go on freely and healthily in the brain, so long a person will remain of a sane mind, and no longer. In all cases of insanity the organic functions are checked, retarded, or wholly suspended in the brain, and the insanity will be partial or complete accordingly as this is partially or wholly the case.

This being the true philosophy of the mind's action as connected with matter, it follows of course that it will lead us to adopt a correct and successful mode of treating all diseases where the mind is affected, perverted, or in any way involved, as in cases of insanity, and the indications to be fulfilled are, to restore a *free circulation of the blood in the brain*, remove the capillary obstruction, to purify and strengthen the blood, and to restore the lost

action of the brain and the nerve force. To effect this, we should use calomel, because it is an alterative, and also promotes an increased capillary circulation; and quinine, because it will restore the lost action of the brain and nerves, and restore any injury that might have occurred to these organs; and salts and senna, because it will thin the blood, and assist in removing capillary obstructions, and very likely add something advantageous to the blood.

In December, 1848, I was called to see a negro woman, for the purpose of making out some papers to send her to the Lunatic Asylum. She had been crazy at times for about twenty years, but of late had become so perfectly unmanageable that it was thought advisable to send her to the Asylum. Her age was about forty; she was thick-set, and rather full-fleshed. After questioning her till I was satisfied that she was insane, and had been so for some time, I told her master I would like to try the effect of medicine in her case, and if it failed to cure her, then he could send her to the Asylum, which was agreed to. I then directed calomel, 30 grains, Dover powder, 3 grains, to be divided into three powders, and one to be taken at bed-time on every other night till all were taken, and in case they did not operate on the bowels in the morning, take senna, 80 grs., salts, 1 oz., to be steeped in a tea-cupfull of hot water, and take of this two tablespoonfuls every two hours until it operated smartly, and to take in the meantime grain doses of quinine every two hours during day-light, the quinine to be continued some time after the powders were all taken.

This treatment was strictly adhered to, and resulted in a perfect

cure. She has had some signs of a paroxysm of the same complaint since, but they all vanished under a repetition of the same treatment; and now she is entirely free from that gloomy, taciturn despondency which hung over her mind during her former lucid intervals, and she has assumed that peculiar vivacity of manner which indicates a fixed and settled sameness of mind which is seldom the case with those who are liable to relapse from slight causes. I candidly believe if this case had been bled, blistered and physiced on the old depleting plan, as is generally done in such cases, hopeless insanity would have been the result; and furthermore, I believe that insanity may be cured with as much facility as any other disease, if a rational and judicious treatment is adopted. It is Leibig's opinion that the constituent principles of quinine are precisely what are required in the formation of the brain and nerves; hence I concluded that it would restore any injury of the brain and nervous structure, and it proved in this case completely successful, as I believe the same treatment, varied to suit peculiar cases, will as a general thing.

In all affections where the mind's action is implicated, there is certainly an injury of the brain and the nerves which communicate with that organ, indicated by the way the eye tolerates a glaring light, the same with the ear, the torpid state of the bowels, indicating a paralyzed condition of the nerve centers;—the stools lack their fecal odor, the appetite is fickle and often craving, and always unnatural and unhealthy; and in fact all the symptoms point to the brain as the great nervous center, which has lost its impressibility;—the blood has ceased to pass freely

through it, to nourish and support it—it has become like the flesh on the legs in the case of Jesse Witter, and the mind is perverted because the brain cannot act by or from the impulse of the will or circumstances connected with the body, hence under these circumstances the mind is incapacitated from acting, judging, or calculating concerning the business of life, and this we call insanity.

The difficulty lies in a diseased structure, through which the mind's action is manifested to man and objects, and all we have to do to correct this diverted state of the mind, is to cure this diseased condition of the organs and tissues, and to restore the lost action of the brain and nerves. When this is done, the action of the mind, brain, and nerves becomes a unity, and is again subject to the will.

Just in proportion as the brain and nerves are formed for a speedy and correct action, being supported by a forcible will, the individual will be capable of accomplishing much or otherwise, that is, the brain must be in a state or condition in which it is capable of receiving and transmitting impressions correctly, and of retaining them long enough for the mind to act on them; hence, the brain must be well supplied with blood, for by the blood the brain has its life, and from the blood the brain receives that peculiar property which is like the burnished face of the silver plate, upon which the daguerrean artist strikes the figure of a man by causing the reflected rays of light to shine upon the plate, for the brain receives impressions in the same way. Thus you can imagine how essentially necessary it is that the brain should possess this peculiar property or quality, which I call the power of

impressibility, without which it is impossible for the mind to act correctly, or to appreciate truly the force and import of impressions.

The phenomenon of life in the brute is like man, as far as the development of the organs are concerned—the brain and nerves receive and transmit impressions as in man, although they cannot calculate or appreciate them—they are influenced by circumstances; external impressions impel the organs to act, and internal emotions which arise from the intuitive functions of organs stimulate the animal to move. The desires arising from the reflex functions of organs are alike in man and brute: there is hunger, thirst, fondness between the sexes, fear and the like, which arise from the functional fitness of the organs; hence the knowledge of the brute is inevitable from his very nature—it is the effect of the spontaneous evolution of the development of the organs.

In man, as these organs are the instruments upon which the mind and the will have to operate, we can readily understand how it is that one person may be great and another mean, simply because they are possessed, one of a well formed brain and nerve, while the other may be defective in the formation of these organs, in which the tables of the brain are like coarse paper—it does not receive and retain impressions either with speed, precision or discrimination. Hence, the difference in character arises from the animal structure and the development of the organs, as well as from the soundness of the particles of matter in their formation, for in this lies their power of susceptibility and conduction, which are governed by the will, and although the will is the result of the

union of mind and matter, yet the will is the head and front of all effective action. The mind of the female is precisely like the male, although her character is decidedly different, and this arises from a difference in structure and the development of the organs; the brain is more elastic, more delicate, and more capable of yielding to the force of the will.

The animal desires arise from the functional requirement of the organism. The brute is possessed of an intuitive knowledge, and this arises from an instinctive requirement of the organism, as hunger, thirst, &c., which impels instinctively to action. The brute possesses this knowledge to a greater extent than man, but you cannot educate him beyond this; yet man possesses this in a degree, which is evident to our senses, independent of our will or the dictates of the mind. Hence, a difference in the formation of the organs, or a difference in the development of the organs, will have a tendency to a difference in character, unless counteracted by education. As the poet says—

“’Tis education forms the common mind—
Just as the twig is bent the tree’s inclined.”

This is true. The organs have to be trained to act in harmony with the mind’s dictation, and to obey the mandates of the will;—there is nothing plainer than this, for we have to learn to talk, to act, and to think before we can express our wants or emotions.

We often see great differences in the members of a family: this arises from the state of the mother’s mind during gestation. The child’s temper and character will range precisely in accordance with the state of the mind and temper of the mother during pregnancy.

From the foregoing facts we conclude the mind singly to be an imponderable body like the magnet, that we cannot fathom nor comprehend: we know its attributes only by the effects of its action as connected with matter, and we have very good reason to believe that the natural tendency of the mind, independent of surrounding circumstances, is to a rectitude of purpose; but the mind is subject to the will in a measure, and herein lies the difficulty in the control of human nature.

As the individual becomes educated and acquires knowledge, the brain enlarges and expands in proportion to a person's acquirements. This may be proved in our common schools and colleges, a circumstance often noticed by teachers. In cases of insanity, the brain never grows any more, but on the contrary often shrinks, as is plain to be seen during life.

The difference between the brute creation and man is, in man, the mind is capable of being improved and cultivated by education, and that the attainment of knowledge by the human mind has no end while life and health remain, whereas in the brute, it is not possible to educate them or improve them beyond the influence of this intuitive capacity for knowledge, arising from the functions of the organs. This intuitive capacity, arising from the harmonious development of the organs while being impressed or actuated by impressions or circumstances, are possessed alike by man and animals, and these emotions being seconded by the will, impel to action and lead instinctively to a repetition of certain acts or evolutions, which follow as a sort of imitativeness; hence animals may possess the power of imitation

in a striking degree, as the parrot, monkey, and many other animals. But when you have educated an animal to a certain degree, all improvement stops, which is not the case in man, although he may be born deaf, dumb, and blind: by education he reads, writes, can converse, transact business, &c., with as much facility and precision as anybody else.

The passions arise from the physical development of the organism and the susceptibility of the nervous tissues, and the nervous centers depending on the excitability of the nerve centers, and the nerve expansions, and the reactive powers of the organs.

Hence, we arrive at the following conclusions, and these are,—that the human mind is composed of three distinct *identities*, which in the *sane mind form a unity*, but in cases of insanity they are *diverted*.—the invisible essence of the mind is one, the brain and nervous centers are one, and the will is the third.

When mind and matter are brought in unison, this union generates a third power, which is the will, and the will rules over the entire fabric; hence we can see the truth of the old adage—

“Convince a man against his will,
And he is of the same opinion still.”

And as Pope justly says:—

“And binding nature fast in fate,
Left free the human will.”

That the will is a sequence of the union of mind and matter, we have ample evidence to prove, for in the lunatic the force of the will is paralyzed in proportion to the intensity of the disease, for insanity is a disease of the organism. As a person approaches to a state of insanity the will becomes enfeebled, which febleness progresses *pari passu* until its effective force is lost, so

that in a case of absolute insanity, the effective power of the will is so completely lost that it is impossible for the individual to will to do anything and then go on and do it; and so it is in those who are convalescing from a paroxysm of insanity—the will gets stronger as the brain and nerves gain strength, until the individual becomes capable by the force of the will of again controlling the mind's action, when the mind and the organs are again brought to act as a unity.

Thus we find that the development of the human mind depends on the soundness and the fitness of the brain, nerves, blood, &c., without which it is impossible for the mind to act correctly or rationally, and that all diseases, however light they may be, affect the stability of the mind in a greater or less degree, which fact is proved by universal practice, and that insanity (so called) is in fact only an aggravated form of paroxysmal fever, (see Chrono Thermal System of Medicine, by Samuel Dickson, M. D., of London), with a peculiar tendency to the brain and other nervous centers, which can be cured by the same remedies usually resorted to in the treatment of our common, ordinary bilious remitting fevers.

As far as my experience goes, this manner of treating diseases where the mind's action is involved has been successful beyond my most sanguine expectations, which is very good evidence that this practice is based on correct pathological deductions, and that this theory concerning the mind's action is correct. I believe the day is not far distant when affections which involve the mind's action will be cured with as much facility as we now cure fevers and other diseases, but there is one

thing certain in treating all such affections, that bleeding, blistering, and physicing with gamboge and the like drastic medicines, are exceedingly pernicious, and injurious in the extreme.

Hence, we find the human mind to be a type of the Trinity, and this type of the Trinity is again three fold, as manifested in the mind's action. The brain and the nerve centers are the first, the invisible essence of the mind is the second, and the will is the third, which three constitute a true type of the Trinity.

Again, the action of the mind involves a conditional trinity, thus: external impressions or internal emotions which stimulate to action, the invisible essence of the mind, and the will, these three constitute the second type of the Trinity which is manifested in the mind's action. And again, the conditions necessary to the healthy action of the mind are three fold; thus, it requires a healthy condition first, of the fluids, secondly, of the brain and nerves, and thirdly, of other organs.

CONCLUDING REMARKS.

In treating consumptives, as well as in all other chronic diseases, the first thing to be done is to educate the patient in what he is to take, the object of, and the effect the medicine is to have on the system. He must understand what he is to do, and what he is not to do, and all the circumstances attending it, so that when he is out of your sight he will continue to carry out the principles involved in your directions.

The practice of medicine can never be carried to a successful issue until the people are educated in the

science of Medical Hygiene and all those sciences which appertain to the preservation of health.

"We teach an hundred things in our schools less useful, and many things more difficult, than the knowledge that would be necessary to cure a yellow fever or the plague."—*Benjamin Rush, M. D., on the Yellow Fever in Philadelphia in the year 1793, page 329.*

Medical Hygiene, and all the sciences appertaining to the preservation of health, should be studied in our common schools, and when this is done, and the masses have become fully acquainted with all these branches, then all patent medicine venders, quack nostrums, humbugery, and all the balance of these swindling institutions will vanish; then the truly scientific and skillful physician will be known

and appreciated, and not before.

There is no knowledge that we can obtain that is more useful to the most humble individual than that which relates to the preservation of health, yet we have not even one work written on these branches that is fit or calculated to be studied in school. The consequence is, that a class of ignorant pretenders have flooded the country with spurious trash for people to read—they read it and adopt it, to their own destruction and ruin. In the yellow fever epidemics which proved so fatal at New Orleans and at Norfolk, if the people had possessed that knowledge of its cause and effects which they ought to have had, I have no doubt it would have saved the lives of at least one-third that died.

And again, the conditions necessary to the healthy action of the mind are three fold: first, it requires a healthy condition of the brain, secondly, of the nerves, and thirdly, of other organs. It is treating consumptives, as well as in all other chronic diseases, the first thing to be done is to educate the patient in what he is to take, the effect of, and the when the medicine is to have on the system. The most understand what he is to do, and what he is not to do, and all the circumstances attending it, so that when he is put your right he will continue to carry out the principles involved in your directions. The practice of medicine can not be carried to a successful issue until the people are educated.

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