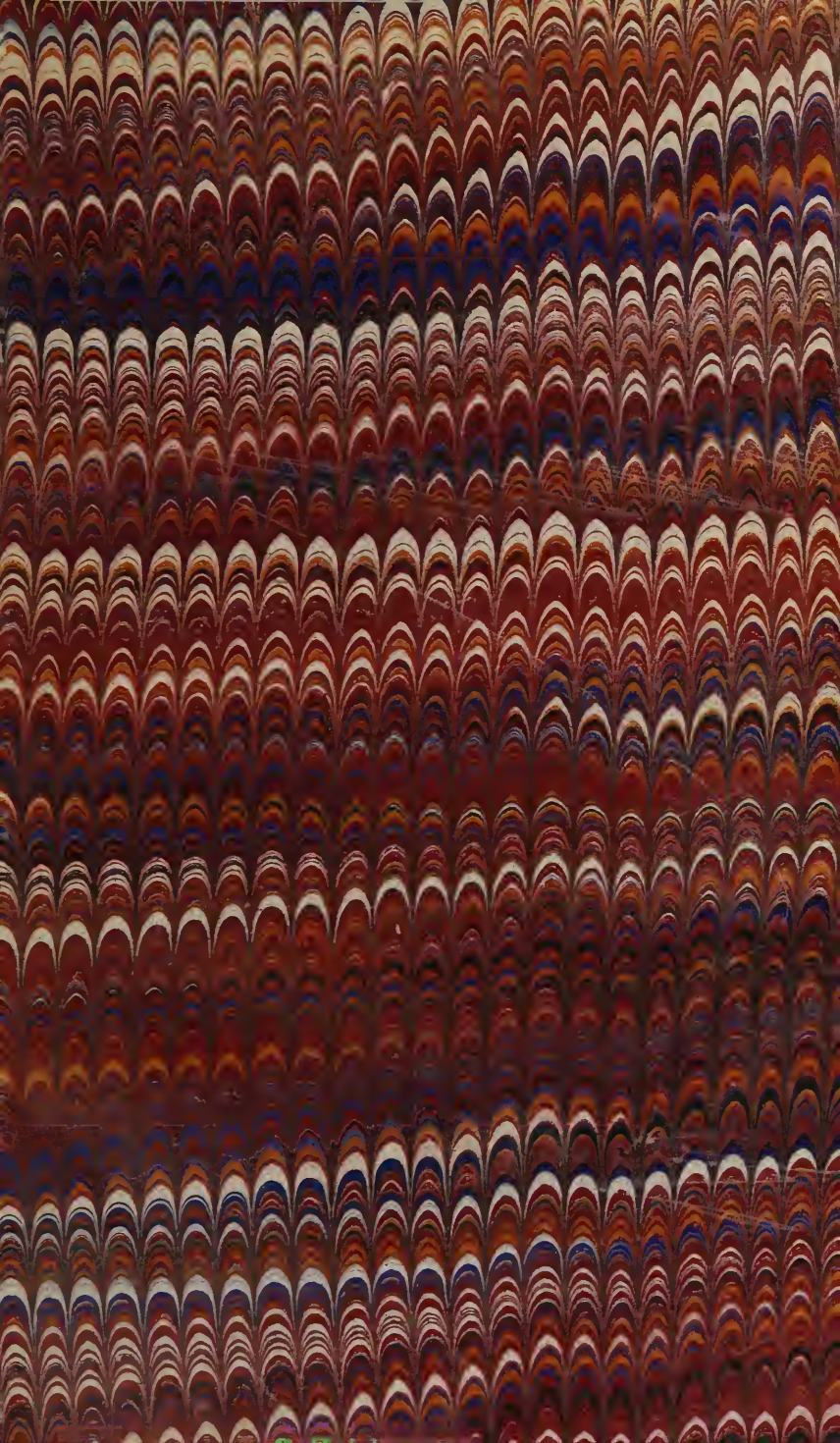


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ANALYSIS OF FEVER.

AN ANALYSIS OF FEVER,

BY

CHARLES CALDWELL, M. D.

Professor of the Institutes of Medicine and Clinical Practice

IN

TRANSYLVANIA UNIVERSITY,

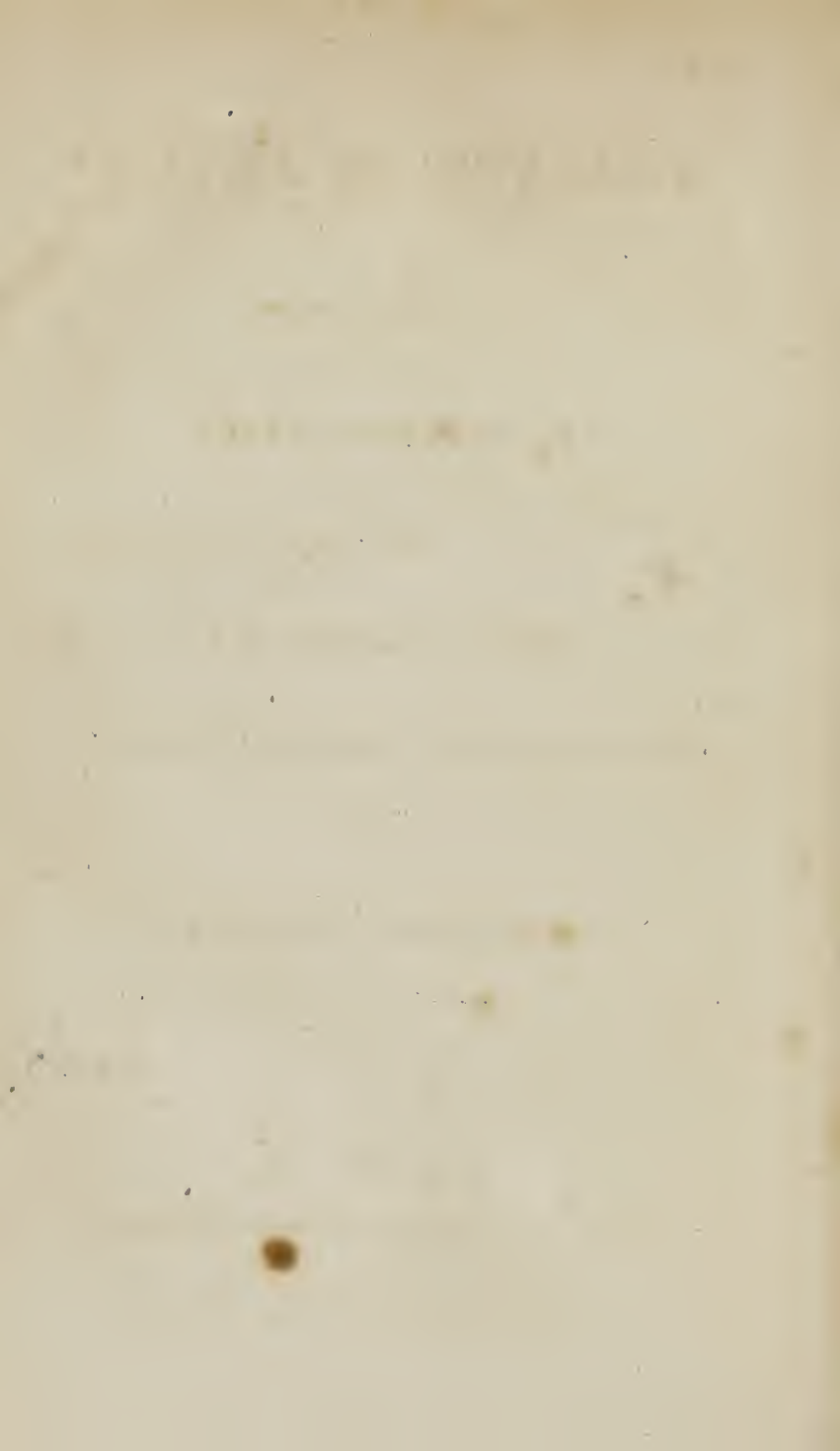
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LEXINGTON, KY.

PRINTED, FOR THE AUTHOR, BY THOMAS T. SKILLMAN.

1825.



TO BENJAMIN W. DUDLEY, M. D.

Professor of Anatomy and Surgery in Transylvania University.

DEAR SIR,

The history of my life testifies, that I am as little addicted to flattery, as I am to a cold and cautious concealment of my sentiments of those whose characters I esteem and admire, and to whose persons their attractive qualities give me reason to be attached. On such subjects it is known to *others* that I speak *freely*, and to *myself* that I always speak what I believe to be *true*.

Permit me, then, with my accustomed sincerity and frankness, to tender thus publicly to *you*, to communicate to my cotemporaries, as far as this humble Essay may circulate among them, and to transmit by it to posterity, should its merits entitle it to outlive its author, an assurance of the exalted estimation in which I hold you, as a distinguished practitioner and teacher of your profession, and an individual of rare and preeminent worth.

Whether as a steady and resolute personal friend, or a colleague and fellow-labourer in a school of medicine, had I the world to select from, I know not the man I should prefer to yourself. The fortunate privilege, therefore, of being associated with you in both capacities, I deem an ample compensation for many disappointments, which, in other relations, it has been my destiny to sustain.

That your life may be long and prosperous and happy, and the brilliancy of your professional career unclouded; that you may receive from a just and discriminating public, in wealth and fame, the rich remuneration to which your services entitle you, and pass to a still higher reward in another state of existence, is the heart-felt wish of,

Dear Sir,

Your sincere friend, and

Obedient servant,

CH. CALDWELL.

Lexington, Ky. January 1, 1825.

PREFACE.



THE author of the following Essay is perfectly aware that, however select his words, or perspicuous his modes of expression may be, a writer or public speaker has but little ground to hope that he will not, by many, be misunderstood, especially in the employment of terms of *general abstraction*.

When such terms are used only for the designation of a class of *facts or phenomena* obvious to every one, they are too generally, either through mistake or intentional misrepresentation, reported to mean *actual substances*, in proof of whose existence the individual referring to them may be called on to render them manifest to the senses—to paint them to the eye, to give to them elasticity and a power of producing sound, or to bestow on them *odour, tangibility, or taste*.

This obstacle to satisfactory and profitable results in science, the author, in common with others, has often had the misfortune to encounter, in the course of his discussions. When his object has been only to designate *phenomena* under a *classified form*, he has been represented as speaking of *substantial essences*.

To this misinterpretation he has been particularly subject in his attempts to communicate his views of two important attributes of life, *sympathy*, and the *vis conservatrix et medicatrix naturæ*.

To prevent, if possible, the repetition of this occurrence, as far as the present Essay is concerned, he offers to the reader the following exposition.

Nature unfolds to us, connected with matter, three distinct departments of science, the *mechanical*, the *chemical*, and the *vital*. Each of these presents us with insulated classes of facts, governed by laws peculiar to themselves. In referring to those classes, we necessarily speak of them under different names.

In *mechanics*, we see all bodies tending to a common centre, and express our sentiment of the *general fact* by the term *gravitation*. But by this we do not necessarily mean an *existing substance*.

When we see certain masses of matter, which had been bent, or otherwise deranged in their form, suddenly regaining their figure and appearance, we apply to the phenomenon the term *elasticity*. But this word is not to be regarded as designating a *substance*.

We attempt in vain to separate by a forcible pull a bar of iron or lead, and express the fact of its continuing united, in opposition to our efforts, by the phrase *attraction of cohesion*.

One body bends without breaking, and we call it *flexible* and *tough*. Another breaks suddenly and easily without bending, and we say it is *hard* and *brittle*; by all which words we mean *facts* and not *substances*.

In *chemistry*, the elementary particles of matter, when intimately intermixed, rush together and unite, forming substances possessed of new properties, and we express our sense of the phenomenon by the terms *chemical affinity*.

In another case, the particles of matter, when closely approximated, refuse to unite, and we apply to the phenomenon the word *repulsion*. But by nei-

ther of these terms do we intend to express the existence of a substance.

In matter where *vitality* prevails, an impression is made on *one part* of a body, and a *remote part* acts, or is, in some way, affected, the intermediate ones remaining unmoved.

The impression is made on the schneiderian membrane, and the diaphragm and intercostal and abdominal muscles are convulsed, the effect of which is coughing or sneezing.

The impression is again made on the fauces or the *internal* coat of the stomach, and contraction suddenly occurs in the *muscular* coat of that organ, and in the diaphragm, the muscles of the abdomen, and those that move the pharynx and the tongue. The issue is vomiting.

Is the impression made on the internal surface of the gravid uterus? The entire organ contracts, together with the diaphragm and muscles of the abdomen, while other parts connected with the generative system relax and expand. The result is *parturition*.

In designation of these phenomena, and very many other similar ones that might be cited, we employ the terms *sympathy* or *consent of parts*, without any reference to an existing substance of which our senses can be made to take cognizance.

In these several cases of deleterious impression on the stomach, the uterus, and the schneiderian membrane, the action excited in the neighbouring parts is peculiarly calculated to remove the irritation, and prevent the mischief it threatens to produce.

To the expression of this and other facts of the

same class, we appropriate the phrase *vis conservatrix naturæ*.

A bone is broken, or a muscle is divided by a cutting instrument. The separated parts are brought together and retained in contact by a suitable apparatus. Without any further aid from the surgeon a cure is effected.

An individual experiences a moderate attack of catarrh. He uses no medicinal substances, but remains in his chamber, perhaps in bed, avoids exercise of every description, and makes a plentiful use of diluting drinks, and recovers his health.

The operation for the popliteal aneurism is performed on an *adult* subject. The small anastomosing arteries of the limb, which had long since ceased to increase in their dimensions, take on immediately a *new growth*, until, in a short time, their size is sufficient to enable them to supply the leg and foot with the entire amount of blood which they require.

In expressing our sense of these facts, and many others of a similar nature, we employ the terms *vis medicatrix naturæ*, by which no reference is made to any thing *substantial*.

The author will only add, that, according to the meaning here attached to them, there is as much accuracy, intelligibility, and propriety in employing the phrases *sympathy*, and *vis conservatrix et medicatrix naturæ*, as there is in the employment of those of *gravitation, elasticity, attraction, affinity, repulsion*, or any others connected with material philosophy. They are all equally abstractions, invented for the designation of classified facts.

INTRODUCTION.



ALTHOUGH the literature of medicine contains many works on febrile diseases abundant in the fruits of experience, judgment, and scientific research, and not a few rich in the attractions of genius and learning, yet, as far as the author of this essay may be qualified to decide, he feels authorized to say, that a correct analysis of fever in the abstract, is nowhere to be found. By such an analysis he would be understood to mean, a distinct representation of all the essential features of fever, accompanied by brief pathological expositions of them, and disencumbered of every thing foreign or superfluous, that might add, in any measure, to the complexity of the subject, or distract the attention in the examination of it.

To be rendered perfect, this delineation, besides being faithfully executed, should be reduced to a form of such limited dimensions, that the whole might be embraced at a single view. Under such circumstances the correctness of the picture could not fail to be recognized by every attentive and qualified observer. The addition of a succinct statement of general curative indications, and the modes of carrying them into effect, would augment not a little the value of the production.

Were a portrait of this description prepared with ability and presented to the public, its usefulness in medicine would be manifold and great.

Removing from the science somewhat of the charges of uncertainty and defectiveness, which, in relation to the point under consideration, have hitherto but too justly attached to it, it would enhance it in the estimation of the enlightened cultivators of general philosophy, give to the profession a more elevated standing, and become itself an object gratifying to the pride, and encouraging to the ambition of the educated physician. Nor would this be the entire extent of its ameliorating influences. In various other points of view, both scientific and practical, it would aid not a little in promoting the interests of rational medicine. To the teacher it would serve as a valuable text-book, free from the elements of delusive hypothesis, and presenting to him the topics on which he should chiefly dwell, in his efforts to expound and inculcate with effect the doctrines of fever: and to the philosophical practitioner it would furnish lights to direct him in most of his professional processes. For fever being a disease of the whole system, affecting every structure and function belonging to it, a thorough acquaintance with it includes a knowledge of all the principles illustrative of the pathology, and applicable to the treatment, of most other complaints. Indeed so extensive in their range, and so engrossing in their nature are febrile affections, that the true science of *them* might well be denominated, with but slight exceptions, *the science of disease*. Like the sun to the minor and dependant orbs that play around him obedient to his government, it would serve, in relation to other affections, as a source of light and a centre of influence, re-

deeming them from darkness, and *exhibiting* if not *retaining* them in the relation and harmony of systematic arrangement. A physician completely master of the science of fever, has but little to learn in relation to that of other complaints.

It is chiefly by considerations like these, united to a deep-felt want of a chart to direct him in the most important part of his clinical instructions, that the author has been induced to attempt the following analysis of fever.

But he does not conceal that he experiences the influence of another motive, which, participating but little of public considerations, concerns principally himself. Nor is it, as he flatters himself, either culpable in him to feel or unbecoming to avow it.

It is upwards of twenty years, a period extending almost to the commencement of his professional life, since he first began to form and discuss the views of fever which he now entertains. At that time, as far as he possessed information on the subject, all *living* physicians were opposed to him in sentiment; and with the writings of Lindamus, Van Helmont, Baglivi, Rega, and a few other *dead* ones, whose notions had been somewhat analogous to his own, and from whom he might have derived certain *seminal ideas*, but *nothing of system*, he was *unacquainted*. Nor had he any knowledge even of the name of Prost, Clutterbuck, or Broussais, neither of whom, he believes, had yet become a writer in medicine.

For the opinions, then, which he purposes to state and endeavour to establish in this essay, he is in-

debted to no one. True or false, injurious or useful, he claims them as his own.

With himself they originated, and were strengthened and matured by his own resources, derived chiefly from a close and persevering attention to the phenomena of fever in the sick, the nature of its causes and the parts and extent of the human system with which they can come into contact, repeated examinations of dead bodies, and the fairest inductions he was able to form from the facts thus collected.* While he willingly, therefore, assumes the entire responsibility that may be attached to the promulgation of them, he holds himself entitled to whatever consideration may be awarded to their author. Recognizing it as at once a dictate of justice, and a rule of conscience, never to usurp the reputation of another, nor defraud him, in any way, of his literary

*Within the last few years, the author has certainly been more thoroughly confirmed in his belief of the opinions he had previously entertained, by a careful examination of the writings of others. From those invaluable sources he has derived much matter of useful illustration and satisfactory proof. But he honestly declares, that as far as he recollects the origin of his knowledge, he is not indebted to them for *one original thought*. Much of the business of his life has consisted in a faithful endeavour to inform himself from the *book of nature*. When correctly interpreted, *that* volume never deceives, because God is its author. His fellow-men, who are fallible like himself, will pardon him if he does not so *fully* confide in them. Nor does he presume to ask or expect any confidence from them, except so far as they may find his opinions *in harmony with nature*.

or scientific rights, he is no less determined to be the assertor of his own. And for this purpose, in part, does he now present himself at the tribunal of the public. Nor, conscious as he is of the rightfulness of his claim, does he anticipate any bar to it from the lateness of the hour at which he has preferred it. He is not aware that, in relation to literary property, a statute of limitation has yet been enacted.

That Broussais wrote and published on fever *before him*, the author of this essay readily acknowledges; but that he conceived his ideas or made up his general views on the subject at an earlier period, he has no reason to believe. Nor does he deem the point of uncertainty a matter of any moment. He is not contending for *actual priority* of conception, but that the conception *was his own*. His object is not to make it appear that other writers are dependant on him for *any thing*, but that he is not dependant on them for *every thing*. He thinks it not improbable that the pathologist of France and himself formed their theory of fever about the same time; and that they are entitled alike to the credit of originality, neither being indebted for his sentiments to the other, nor to anterior writers. Which of the two may have most efficiently cultivated the subject in question, and given the most lucid and practical exposition of it, the profession will judge when this analysis shall have been submitted to their examination.

Against Broussais the charge of plagiarism is, if not openly, at least by implication, preferred, by some of the writers of his own country. Having first

contested with him in vain the correctness of his doctrines, their object now is to deprive him of the honour of them.

To say nothing of generosity, this procedure appears to be a gross violation of justice, and ought to awaken the indignation of the public against its authors. Yet all history attests that it is the line of conduct too generally pursued by the envy and malevolence of jealous cotemporaries, to reduce to the limited standard of their own, the loftier reputation of original writers.

Previously to the year 1808, the period at which he first published on the pathology of fever, Broussais had been, from the commencement of his medical career, almost perpetually engaged in military practice in different parts of the world; a course of life rich indeed in opportunities for observation and reflection, but highly unfavourable to extensive or curious researches in professional literature. If, then, the views which he now claims as his own, existed at that time in antecedent writers, in a developed and intelligible form, why were they not detected and adopted by others, whose time was less engrossed by practical labors, and who had daily and unimpeded access to the most extensive and best selected libraries in the world? The facts that they were not thus detected, and that they cannot now be shown in the works referred to, except in insulated scraps and scattered fragments unfit to be united and moulded into a system, amount to evidence which nothing can invalidate, that Broussais did not derive his

views of fever from so meagre a source.* Besides, there are in the writings of that accomplished physician, a freshness, vigor, and independence of thought, which would seem to prove incontestibly the originality of his intellect, and its affinity for science rather than learning—its propensity and fitness to observe and reflect, rather than to read, collect, and borrow. To such an intellect it is much more congenial, as well as easier, to draw from the boundless treasures of nature, than from the limited stores of antecedent writers. The rich and provident have no temptation either to borrow or plunder. And if, from his talents and industry, Broussais does not possess within himself such abundant resources as place him far above a state of dependance, then is the evidence which his productions furnish eminently deceptive.

That a few preceding writers had in conception *approached* the doctrines now maintained by that pathologist, and that some of them had even enjoyed a distant prospect of the promised land, but were

*Admitting (which is the utmost that can be claimed) that Broussais derived many of his materials from antecedent writers, he is certainly the *constructor* of his own theory. He *erected* the fabric, while, to say the most, others only supplied him with the articles for building.

But to *classify and systematize* requires much more genius, and a wider compass of thought, than *merely to discover*. The *latter may* be the result of *accident*, the *former must* be that of *intellectual exertion*.

The architect occupies a more elevated sphere, than those who prepare for him the brick and mortar.

prohibited from entering it, is sufficiently probable. And that the general condition of the present age in relation to medicine, had prepared the way for the full development of those doctrines, is certain.

But where is the discovery or the improvement of importance in any branch of knowledge, respecting which as much may not be said?

That, in the extent and richness of their attainments, one or more individuals may greatly outstrip all others of the time, considered *also in their individual capacity*, is true. But it is rare that they surpass, in any eminent degree, their *cotemporaries collectively*. Great masses of intellectual light consist of a concentration of scattered scintillations, rather than of a blaze from a single source. Issuing from a thousand different points, the elements of additional knowledge are afloat, and while the multitude, unconscious of their agency in the work of improvement, are bent on other pursuits, the more highly gifted and fortunate few, whose business is study and their object philosophy, collect and appropriate them.

For their discoveries and their greatness, as far as greatness depends on knowledge, all men who have rendered themselves illustrious, have been indebted much more extensively than is generally imagined, to the circumstances of the age in which they have lived. They have, to an extent by no means inconsiderable, performed the mere office of so many lenses, collecting to points of more intense brightness the innumerable feebler lights that only glimmered around them. They have, in fact, effected their dis-

coveries, amassed their attainments, and succeeded in their schemes of meditated improvement, because they have availed themselves of the requisite advantages placed at their disposal by the condition of the times. Situated in the midst of other circumstances, their characters, performances, and general fortunes would have been different; still, however, corresponding with the advantages afforded them. Preeminent talents are derived from nature; but pre-eminence in knowledge, achievement, and fame, from industry and accident.

Had Columbus been born at *an earlier* period, he would not have been the discoverer of a new world; and had *he never* been born, the discovery would have been made by some other navigator before the middle of the sixteenth century. The event was ripe, and, to make its appearance, required but a skilful and adventurous hand to pluck it.

Had Newton lived during the sixteenth century, the glory of developing the laws of gravitation, and fascinating the world with the doctrines of light, would have been reserved for another. And, at the proper time, *another* would have arisen to effect the discoveries.

Had Franklin flourished during the dark ages, he would neither have disarmed the heavens of their lightning, nor a tyrant of his sceptre—

“eripuit cælo fulmen, sceptrumque tyranno;”

and yet the deeds would have been long since performed.

Had Fulton been the cotemporary of Gallileo or Copernicus, he would not have become the founder of steam-navigation; and yet that art would certainly have been discovered. Nor, had Broussais written during the age of Boerhaave, would he have given a full exposition of his doctrine of fever. Even Bacon himself, had he lived under circumstances less propitious, would not have been the author of inductive philosophy.

The periods at which they flourished were pregnant with discoveries, and those individuals, from the peculiar adaptation of their talents and habits to the existing condition of things, had the glory to bring them forth. Had *they* been all wanting, to some other worthies, of similar qualifications, would the events have owed their birth. To accomplish her purposes when sufficiently matured, nature is never at a loss for means. Most palpably, then, other circumstances besides genius—and those circumstances combined may be denominated *Fortune*—contribute to render individuals illustrious.

It will be observed that in the course of this essay the writer has rarely introduced authorities. For this seeming neglect he offers no other apology, but that he does not rely on authority for the establishment of his opinions. He is unwilling, therefore, either to make a needless parade of learning, or to trouble the reader with quotations or references. If he cannot sustain his sentiments by the force of their own intrinsic evidence, without the employment of factitious aid, they are incapable of being sustained, or he is unworthy to appear as their advocate. In

either case the present effort deserves to prove abortive, and cannot fail to meet its desert.

Another reason, not without weight, induces him to wave the introduction of authorities. In the writings of no author, those of Broussais not excepted, has he been able to find what *he* deems a well executed picture of fever. Even though most of the requisite materials may be present, they are not judiciously assorted and combined. The authors would seem to have been writing *for themselves*, or for individuals as thoroughly informed as themselves, and not for readers who, but moderately or not at all acquainted with their subject, *are in quest of information*. Hence the representations given appear to the author to be, in no small degree, defective. They are, at best, but partial outlines, to be completed and filled up by the readers, each one for himself, as his means may enable him, and his fancy and judgment direct and approve.

- For physicians who are already extensively versed in the knowledge of medicine, and whose maturity of intellect and habits of discrimination are such as to secure them from mistakes, this may be sufficient; but not for the younger members of the profession, who are still in quest of elementary knowledge, and who have erected, as yet, no well-tried standard to test the correctness of the views that may be presented to them. It is chiefly, then, for the latter description of readers that the following analysis is intended and prepared. The pupils of Transylvania University, more especially those of the author's private classes,

will recognize in it the principles of his lectures on the pathology of fever.

Should he, on some occasions, be more minute in his analysis, and more copious and diversified in his illustrations than physicians accustomed to investigation, and possessing within themselves the necessary means of exposition and proof, may deem requisite, it will be recollected, as his apology, that he is in the habit of instructing youth, and that he is now writing *principally for that purpose*. Hence more ample details, and more various presentations of his subject are requisite.

But while compelled to be full, it is not his intention to be prolix or diffuse. On the contrary, he will always endeavour to reach his object by the shortest route, and finish his exposition of it in the fewest words. While conciseness of expression, therefore, and precision of manner, as far as they may consist with perspicuity of illustration, shall be his constant aim, it is his purpose never to leave a topic that may be important to his general subject, until he shall have thrown on it all the lights he can collect. Experience has taught him that in no other mode of discussion can matters of science be rendered acceptable to the judgment, interesting to the feelings, lasting in their impression, or useful in their effects. To illustrate them partially or communicate them obscurely, is tantamount to not communicating them at all.

SECTION I.

Name and Definition of the Disease.

THE perfection of technical language consists in its fitness so far to communicate science by names, as to designate correctly the nature of things, by the terms employed to distinguish them from one another.

This principle has long governed *in part*, and governs now *entirely*, the constructors of nomenclatures in the different branches of knowledge.

To such an extent is this true, and so universally does it comport with the common sense of mankind, that, not only in civilized nations, but even in savage life, among the aborigines of our own country, the peculiar characteristics of a warrior or a sachem are designated by the name bestowed on him by his tribe.

It is in Botany, Mathematics, and Chemistry, more especially the latter in its present highly improved condition, that we witness the most extensive and successful effort to teach science by means of nomenclature. Such is the perfection of technical language in that department of knowledge, that, if acquainted with the terms by which the primitive kinds of matter are designated, we cannot fail to recognize, by their names, the nature of the chemical compounds which they form. And even in relation to many simple or elementary substances, their leading properties are expressed by the terms by which the substances themselves are made known.

In reference to fever, a similar effort, however unsuccessful, appears to have been universal. At the earliest period to which the history of that complaint can be traced, an attempt was made to communicate a knowledge of its nature and character by the name bestowed on it. And the same has been repeated by every modern nation in which medicine has advanced to the rank of a science.

Believing the essence of fever to consist in an augmentation of the temperature of the body, the ancient Greeks denominated it *Puretos*, the *burning* or *fiery* disease, from the word *Pur*, which signifies *fire*.

For a similar reason, the Romans, who derived from the Greeks a great proportion of their professional knowledge, called it *Febris*, from *Febreo* or *Ferveo*, to glow or be hot.

By the English term, *Fever*, the French, *Fievre*, and the Italian, *Febbre*, precisely the same idea is conveyed.

Nor is any other interpretation to be affixed to the Spanish *Calentura*, the German *Fieber*, or the name of fever in the Portuguese* language. By each term the designated complaint is represented as consisting in preternatural heat.

However praiseworthy in its object may be this effort of the nomenclators of ancient and modern times, to characterize, by its name, the disease under

*The reason why the author has not inserted the Portuguese term for "fever," is that he is uncertain as to the correct spelling of the word, and he has no Dictionary of the language before him.

consideration, the failure of it is obvious. Its effect has been, of course, rather injurious than useful, because it has contributed to the perpetuation of error. And error is but another appellation for *ignorance* sanctioned by false reasons and fortified by prejudice.

Fever consists of a succession of combinations or groupes of coexisting phenomena, each of which is alike essential to it, and constitutes necessarily a component part of it. I mean that, in every case, the *groupes* are essential in the composition of fever, but not every *phenomenon* or *elementary part* of each *groupe*. Of the phenomena referred to, an augmented temperature is but *one*, which is not *at all times* actually present. In some cases of fever there is no increase of temperature,* from their commencement until their close; and in none does that symptom prevail universally throughout their whole course.

*A *natural temperature* was one of the “*three naturals*” mentioned by the late Dr. Rush, as marking some of the worst cases of yellow fever. In that complaint “a natural temperature, a natural pulse, and a natural tongue” were considered by that great observer as uniformly indicative of a fatal result.

Nor can the case be otherwise. Those three phenomena testify to the *destruction* of *sympathy*—to the *dissociation* from each other of some of the most important parts of the body. Sympathy being a real *vital* property, essential to the existence of living matter, they show that the work of death is already begun; and in such a way, that it cannot be arrested. Destroy sympathy, and *practical* medicine becomes, in its relation to general diseases, a *mere name*. If there exist a single exception to this, the author is not, at present, so fortunate as to recollect it.

On the contrary, fever, when regular, is as uniformly marked, in some of its stages, if not over the whole body, at least in certain parts of it, by a diminution of temperature, as it is by an increase of it. In the early part of its course, in addition to its being accompanied by a sense of chilliness, some portions of the skin, at times the whole of it, are preternaturally cold. And this phenomenon is as essentially a component part of the complaint, as the elevated temperature which is subsequently developed. If, then, the disease is to receive its name from a *mere symptom*—and the increase of heat is nothing more,—*that symptom* might be a diminished temperature as well as an augmented one. Or it might be indifferently any of the other several symptoms that *essentially* belong to it, the chief of which shall be specified hereafter.

Fever consisting *necessarily* of a series of successive stages, each composed of its appropriate phenomena, some of them the very *opposites of each other*, it is impossible to designate its nature and character by a single term. As well might you thus attempt to make known the characters of the different periods of the day, or of the successive and discrepant seasons of the year. As well derive the name of the year from *heat*, because the summer is hot, from *cold*, because the winter is cold, or from *flowers* or *fruit*, because the spring is the season of bloom, and the autumn of ripening.

Unlike other forms of disease, this complaint has no one steady master phenomenon, which accompanies and characterizes it throughout its whole

course—no single symptom whose presence constitutes, and whose removal extinguishes it.

A brief contrast of it with a few other complaints will at once illustrate and establish this point.

Apoplexy consists in a loss of sensation, intellect, and voluntary motion. Restore this loss, and it is apoplexy no longer.

Epilepsy consists in certain convulsive movements, beginning, progressing, and terminating, in a given way. Prevent or remove these, and the disease has no existence. Of St. Vitus's dance the same may be said.

Remove from asthma impeded respiration, and it is asthma no more.

Hydropic affections are formed essentially by *aqueous* effusion, and are, therefore, sufficiently characterized by the appellation bestowed on them.

Diarrhœa, cholera, diabetes, and mania, being constituted each by a prevailing symptom, may each be designated, as to its character, by a single term.

As much may be asserted of rickets, jaundice, lues venerea, and herpes. To each belongs a single characteristic, by which it is principally constituted and known.

With regard to fever, the case is not only different, but opposite. Composed of elements heterogeneous and conflicting, as no single attribute *constitutes* its nature, no single name can *designate* it. In it, the skin, by turns, is hot and cold, dry and moist, rigid and relaxed; the pulse agitated or calm, strong or feeble, frequent or slow, corded or yielding; the tongue crusted or clean, dry or moist, unusually pale.

possessed of its natural colour; or inordinately red; the irritability and sensibility in excess or deficiency, and the intellect shattered or sound.

A knowledge of this, long since extinguished in physicians the hope of being able to expound the nature of fever by the name bestowed on it. The effort to that effect, therefore, was abandoned by them in despair.

Their next attempt was to include the phenomena essentially characteristic of it within the limits of a *definition*.

Here, again, they were met and defeated by the same difficulties. The striking diversity and contradictory nature of the symptoms presented by the complaint, in its different stages, set definition at defiance.

To define, said an ancient sage, belongs only to the gods. In relation to fever, this is not merely *figuratively* but *literally* true. To explain in a few words, and thus compress within the restricted compass of a definition, the several different and warring elements of this disease, does not comport with the powers of a mortal. Involving, as it does, a palpable contradiction, it constitutes an *impossibility*, and cannot, therefore, be effected *by any power*.

For the further illustration of these remarks, and the establishment of their truth, sufficient evidence may be derived from a brief survey of the extreme difficulties experienced by the profession in their attempts to define fever, and the several discordant definitions of it adopted by some of the most distinguished physicians the world has produced.

Galen pronounced fever to be, a "change in the healthy temperature of the body, accompanied by a pulse preternaturally *quick* (he probably meant *frequent*) and strong."

Although that great physician escaped error by declining to say whether the change of temperature was from a lower to a higher degree, or the reverse, yet his definition is so meagre and *indefinite*, as to convey to the reader no adequate idea of the subject to which it relates.

Waving entirely any remarks on the condition of the pulse, Vogel states fever to be, "a preternatural augmentation of the internal heat, (*innati caloris*,) with a dryness of the tongue, and a heaviness of the body."

This definition, to say the least, is no improvement on the foregoing.

Without taking any notice of the altered temperature, Bianchi thus defines fever: "A change in the pulse, with a peculiar and painful lassitude of the whole body, and a sudden debility of the voluntary muscles."

This definition, although a little fuller, is, in no degree, more correct or conclusive than the others.

Sennertus defines fever, "a disease consisting in *an increase of temperature alone.*"

Silvius, C. Boerhaave, and Darwin, make it consist in "*an increased frequency of the pulse.*" H. Boerhaave, in "an augmented temperature and an increased frequency of pulse, preceded by horripilation and shivering."

Cullen defines it a disease ushered in by "languor, lassitude, and other signs of debility, succeeded by chilliness, a frequent pulse, an increase of temperature, and a derangement of several functions, especially a feebleness of the limbs, without any primary local affection."

To this definition, the best unquestionably that had been given, Sauvage, who may really himself be regarded as the author of it, adds, "*madore in declinatione;*" a sweat or cutaneous moisture on the decline of the paroxysm.

To the definition, as improved by the French nosologist, Fordyce further adds, "some derangement of the intellectual functions:" and another writer subjoins, "a preternatural tension in the tendons of the wrists."

Clutterbuck pronounces fever to consist "essentially in topical inflammation of the brain or its membranes."

Although in one part of his "Inquiries" Dr. Rush asserts that fever cannot be defined, he pronounces it, in another, "a convulsion in the arterial system."

Such are the various definitions of this disease given by the several authors whose names have been cited.

Of the insufficiency of them all, besides the probability to that effect afforded by their discrepancy, abundant evidence is derived from the fact, that by the aid of none of them *individually*, nor even by that of the whole of them *combined*, can fever in all its modifications, be known. To a person unacquainted with that disease, a case of highly congestive fever

shall be presented, whose features he shall not be able to recognize in any technical definition on record. Yet, from the genius and attainments, the ample experience and great sagacity, of the authors quoted, it is doubtful whether any others will be able to improve on their efforts to define.



SECTION II.

Elements of Fever.

UNDER the circumstances detailed in the preceding section, all, perhaps, that can be done in attempting an analytical representation of fever, is to throw together and arrange, in their proper order, its natural elements, accompanying them with such explanations and remarks as may be requisite to render them perfectly intelligible; to expound their pathology, and show their importance as grounds of practice.

The elements of fever are so denominated, because they are essential to its composition and existence. Their presence and combination form it, and without them it can no more have being, than any other whole can exist without its parts. It is not unimportant to remark, that they afford incontestible evidence of the recuperative powers possessed by the living system, and show fever to be nothing but an effort of those powers to restore health.

Were this a point of mere abstract speculation, it would be of little moment, and might, without impro-

priety, or culpable neglect, be passed unnoticed. But being, as will hereafter more fully appear, essential to rational prescription and successful practice, it has an undeniable claim on the attention of the profession.

The elements of fever are five in number. But previously to a specification of them, and to render such specification the more satisfactory, by placing it on solid and tenable ground, it is requisite to observe, that fever arises necessarily from a *morbid impression*. That impression, as will be demonstrated hereafter, is, in its *primitive* state, *essentially local*. Without its deleterious influence fever could no more appear, than an effect could, in any other case, arise without a cause.

Impression is either *irritative, sensative, or mixed*.

An impression simply irritative produces *action* without *sensation*.

Examples of this we have in involuntary muscular motion, the circulation of the blood, healthy digestion, secretion, and nutrition. In these instances the action, which is *natural and healthy*, is the result of impressions that are not felt.*

Examples of *morbid* irritative impressions we have in those that give rise to tetanus and hydrophobia.†

*The vital properties from which this action arises, are the *organic sensibility*, the *insensible organic contractility*, and the *sensible organic contractility* of Bichat.

†The morbid impressions on the mucous lining of the stomach productive of the fevers denominated *idiopathic*, such as bilious fever in all its modifica-

Here, the impressions, sensitive at first, become so purely irritative, that the accidents productive of them are oftentimes forgotten. After a considerable lapse of time, the diseases appear, and *must have a cause*. That the morbid *irritation* (*irritative impression*) continues during this interval, cannot be doubted, else would the complaints be *absolutely causeless*. Did both *it* and the morbid *sensation* cease, the part injured would be restored to a condition perfectly healthy, in which case neither tetanus nor hydrophobia could possibly take place. That in either of those complaints the blood is contaminated and disease generated through that channel, is a humoral notion too gross and groundless to deserve refutation. But if it even were so—if sanguineous contamination did occur, still would an impression simply irritative be the cause of the mischief.

*Sensitive impressions** produce at once sensation and action.

Of these, in a healthy state, instances innumerable present themselves daily in the functions of all the

tions, pestis vera, typhus fever, and scarlatina; likewise the impressions produced by the matter of small pox, of measles, and of influenza, are also irritative. The knowledge of their having been made is derived only from their deleterious effects, some time subsequent to an exposure to them.

Still, like the impression productive of tetanus, they must exist during the interval, otherwise they could not engender fever.

*These impressions are made through the medium of the *animal sensibility* of Bichat.

external senses. The examples of heat and cold, light and sound, and the impressions of taste, productive as they are of both sensation and motion, furnish on this point satisfactory illustration.

Instances of *morbid* sensitive impressions present themselves in wounds, burns, bruises, and other external mechanical injuries. These, when severe, prove the causes of fever.

The first element of fever, then, is *morbid impression*,* irritative or sensitive, from which, *as a root*, the complaint arises, and without which it could have no existence. Conformably to a law of living matter, the disease results from the morbid cause acting locally on an irritable or sensible part of the system. I repeat, that from the fundamental principles which govern the human system endowed with life and all its properties, the diseased action can take place in it in no other way.

*This element has as real an existence as the others, and is as distinct from them as they are from each other. In evidence of the truth of this, it usually prevails some time, occasionally a *considerable* time, previously to the occurrence of the second element. It is, moreover, as palpably the cause of the second element, as that is of the third, the third of the fourth, or that again of the fifth. But that the several elements of fever stand related to each other as cause and effect, is, to the inquiring and analysing mind, a truth as obvious as any embraced in the science of disease. In the strictest sense of the terms, they bear to each other the *uniform* relations of *precedence* and *consequence*, *aptitude* and *proportion*, and these are the characteristics of cause and effect.

From the first, as a cause, arises, by sympathy of parts, the *second* element of fever, denominated its *access*, in which uneasiness, languor, lassitude, debility and dulness, unfitting the diseased for all exertion, whether corporeal or mental, constitute the predominant and characteristic symptoms.

During this stage of the complaint, the capillaries of the *skin* are deprived of a portion of the blood which they usually contain, as appears from the pallid hue, and shrunken condition of *that organ*, as well as from the diminished size of the nose, ears, and extremities, and, in violent cases, of the whole body.

The blood thus removed from the skin and extremities is thrown into the more central parts, giving rise to broken and irregular circulation, excitement, and heat. The condition produced in the system, in relation to its vital and active properties, appears to be, a *preternatural diminution* of the muscular, nervous, and intellectual powers—in more technical language, *of the general energy of the nerves and brain*. The practical indications suggested by this state of things will be stated hereafter.

The *third* element of fever is the rigor, chill, or cold stage, in which the skin, excited to the process of *real contraction*, exhibits the appearance called *cutis asserina*. By means of this contraction, the cutaneous capillaries are more completely emptied of their blood, the extremities and all projecting parts of the body are further diminished in size, and a general tremor, often increased to a severe shake, attacks the system.

During this condition of things, the pulse is small, frequent, and somewhat corded, the natural and healthy action of the capillaries, in every part of the body, appears to be suspended, and those vessels manifestly labor under a spasmodic affection, more or less violent according to circumstances. Hence secretion *generally* is checked—in the skin, the liver, the kidneys, the lungs, the pancreas, and the entire tract of the alimentary canal; cutaneous ulcers, if any exist, cease to secrete pus, and, if the system be under the influence of mercury, the salivation dries up.

Respiration is now anxious, restricted, and frequent, and the sick feel conscious that that process is not productive of its natural and salutary effects. The air expired does not possess either its usual amount of moisture or its customary temperature, being, at once, preternaturally cool and dry, and the blood ceases to be completely arterialized.

It is now that, from the augmented derangement of the nerves and brain, the general sensibility is most diminished, and the intellect suffers deep deterioration.

From the symptoms which predominate at the present period, it is sufficiently manifest, that the equilibrium of circulation is still further broken, and the accumulation of blood in the heart and internal vessels generally, greater and more oppressive in this stage of fever, than in that which had immediately preceded it. In the conflict* which evidently exists

* In this struggle or civil war of the system, the capillaries, by contraction, throw the blood from the

between the capillaries and the larger organs, the former have, as yet, a decided ascendancy. Hence the distressing labor, anxiety and oppression which are experienced within, and the absolute necessity of the vigorous *reaction* of the heart to remove them.

This salutary and necessary state of resistance we find in the *fourth* element of fever, which is usually denominated the hot stage, or stage of excitement. It follows immediately the cold stage, and, as already represented, appears to be produced by it.

It is now that, by means of awakened reaction, the heart makes an effort to restore the equilibrium of circulation that has been lost. The arteries, especially the carotids, begin to throb, a proof of the resistance the blood has to encounter, the face becomes flushed, severe headach and perhaps delirium ensue, the temperature of the skin is augmented, but still that organ, from a want of its secretory action, is harsh and dry, a distressing thirst prevails, from a similar want in the membrane lining the mouth, tongue, and fauces, and secretion generally continues restricted.

Corresponding with the augmented temperature of the body, the air expired is now preternaturally heated, the secreting surfaces make an effort to regain their healthy action, and the lost sensibility and powers of intellect are partially restored. Every thing begins to announce, that in the struggle which

circumference and extremities of the body towards the centre, while the heart labors, at first in vain, to project it back again.

exists between the deleterious impression and the recuperative energies of the system, and between the capillaries and the larger organs, the latter are likely to gain the ascendancy. This ascendancy is at length effected in the occurrence of

The *fifth* element of fever, which is usually denominated the *sweating stage*. But as the glandular organs and surfaces generally, as well as the skin, begin now to act, viz. the liver, the kidneys, the pancreas, the salivary glands, and the membranes covering the tongue,* and lining the fauces, lungs, and alimentary canal,† *this element* would be named with

*The membrane covering the tongue secretes also *during fever*, as appears from the *crust* or *coat* deposited on that organ. But the secretory action producing it is *morbid*. It becomes healthy only on the solution of fever, when the other glandular structures begin to act in a natural manner. The febrile crust begins then to disappear, the tongue becomes soft and moist and clean, and the thirst, which had been troublesome, declines or ceases—a manifestation of the healthy secretory action of that organ.

†The author does not mean that in the solution of every case of fever *all* the emunctories of the body begin to act at the same time with *equal strength*. Some one of them always takes an ascendancy over the others, as is uniformly the case even in health. But they are all in a *condition* to act, and really do act in a much higher degree, as well as much more naturally, than they had done in the antecedent stages of the disease.

Of the several emunctories, the skin would seem to predominate most frequently in the secretion of sweat. Next, perhaps, are the liver and the other

much more propriety the *secreting* stage. The sudatory discharge being more obvious to sense, as well perhaps as more abundant in quantity than either of the others, is the only reason why that evacuation has given its name to the present existing state of action.

This stage constitutes the *critical discharge* in fevers—an occurrence which, far from being what many have pronounced it, a phenomenon existing only in the imagination, is a solid reality, and takes place, in some shape, and to some extent, in every case of

secreting structures that pour their products into the alimentary canal. Then come the kidneys, and, lastly, the schneiderian membrane in the secretion of mucus. These are the four secreting sources that contribute most essentially to the solution of fever.

No sooner do they begin to act to a sufficient extent, than all evidences of preternatural internal congestion and excitement, and all irregularity in the circulation of the blood, gradually disappear.

From having been contracted, harsh, dry, and sometimes pale, the skin becomes soft, a moisture appears on it, and its natural colour returns.

The pulse, no longer small, restricted, or irritated, indicates, by its softness, freedom, and easy expansion, that the blood meets with no obstruction in its passage to the extremities. Respiration, which had been anxious and oppressed, becomes natural and pleasant, and nausea, vomiting, uneasiness in the epigastric region, and all other evidences of gastric irritation, are soon at an end.

All these are but so many manifestations of the return of centrifugal action, and the restoration of that equability of circulation and excitement which fever had deranged.

fever that terminates favourably. In reality it *must take place*, else will the disease prove inevitably fatal. It announces, that for the time being, at least, the heart has gained the victory over the capillaries. It indicates the solution, partial or entire, of the febrile paroxysm; such solution being nothing more than the victory specified—the conversion of general *centripetal* into general *centrifugal* action.

Into the five foregoing elements, more or less strongly manifested, and bearing to each other, in different cases, very different proportions. is every febrile paroxysm resolvable.

This is equally true, whether the complaint consist of one *simple* and *short* paroxysm, as in common ephemera, of a succession of such paroxysms, as in a regular quotidian or tertian, or of one *long compound* paroxysm, as in the continued bilious, the yellow, or the typhus fever.

Analyse these several paroxysms, and it will be found that they are all made up of the same components—that they all consist of *an original local and morbid impression, an access or stage of depression, a cold stage, a stage of excitement or reaction, and a secreting stage*.*

As already stated, these elements, in different cases, bear to each other very different proportions.

*In many cases of fever, especially during the prevalence of epidemic diseases, so rapid is the transition of the system to the stage of excitement, that the first three elements are scarcely noticed. They notwithstanding exist, and can be recognized with certainty by a careful attention to the complaint from its commencement.

Their relative proportion is, perhaps, most natural and perfect, in a regular paroxysm of tertian intermittent, where neither of them is long, and all of them are strongly marked.

In a quotidian, the third element, or cold stage, is comparatively shorter, and the stage of excitement of greater length.

In a quartan, this proportion is reversed, the *cold* stage being protracted, and that of *reaction* short.

In continued fever the access is of considerable duration, the cold stage for the most part short and usually slight, and the stage of excitement greatly protracted.

But whatever may be their relative proportion, in duration or violence, to the composition of a paroxysm of fever they are all essential; when they succeed each other in the foregoing order they *constitute* fever; and when the first of them takes place, it appears to be a law of nature that the *others must follow*.

The febrile cause, whatever it may be, produces the original deleterious *impression*, that produces the *access* or stage of *depression*, the access gives rise to the *rigor* or stage of strong *capillary spasm*, the rigor, by throwing the blood in preternatural quantities on the heart, rouses it to the stage of *excitement*, and that proves the cause of the *secreting* stage, which, carried to the proper extent, terminates the paroxysm, as naturally and necessarily, as the several previous stages had produced each other.

This series of states or modes of action, observing thus a uniform succession, seems to constitute one of the laws of nature in relation to the human body in

a diseased condition, provided the morbid impression be sufficiently powerful. It is as much a compound or consecutive process, and is as obviously governed by a settled rule, as that of deglutition, chymification, chylification, sanguification and nutrition. Like all other processes of nature, then, under the governance of established laws, it must be intended and calculated for the accomplishment of some useful purpose; for nature never works but to effect such purpose.

In the present instance, that the object held in view is the restoration of health, does not appear to admit of a doubt. Let the original malign impression be made with sufficient force, and unless the other stages or states of action follow, *health will not be restored*, but the patient will sink under the primitive injury.*

In plague and yellow fever, the truth of this assertion is often demonstrated. In the most suddenly and certainly fatal cases of those complaints, such

*If to this proposition any exception exist, it is found in the phenomena of cholera morbus and diarrhœa, more especially the *former*. In that complaint the pathological condition of the system is very nearly the same as in bilious fever. The same kind of *local* deleterious impression, and an equal degree of hepatic and abdominal congestion exist. There is also, for the most part, if not always, more or less of the rigor or cold stage. But the stage of *secretion* takes place, without the intervention of that of *excitement*. It does not, therefore, amount to fever.

Even this complaint, however, shows how essential the stage of secretion is to a recovery. Unless it

is the overwhelming force of the original impression, that the system cannot react. The consequence is, that the individuals attacked die in the access of the disease. They sink into an apoplectic or lethargic condition, from which nothing can recall them. Were reaction possible, the termination of the complaint might be favourable; because, by the usual and salutary process, the effects of the original impression might be thrown off. In treating cases of this description the paramount duty of the practitioner is to *excite reaction* by whatever means may appear to him most effectually calculated for the purpose.

In relation to malignant intermittents, the same thing is true. So overwhelming, at times, is the primitive impression of the poison producing them, that the system is prostrated by it below the point of reaction. Here, as in pestilence and yellow fever, the patient dies in the *access* of the paroxysm, the stage in which death uniformly occurs in malignant intermittents that prove fatal* When, on the contrary,

takes place, death is inevitable, as is proved by that form of cholera denominated *mal de chien*, in which no bile appears in the evacuations. It is chiefly by the bilious and abdominal secretions that this disease is removed.

When these secretions can be excited, the patient *may* recover. When they cannot, he *must* die. Here, the bile and other abdominal secretions constitute the *critical discharge*.

In the morbid chain but one link is wanting to constitute fever; and even that is often supplied. Many cases of cholera are marked by all the symptoms of a febrile affection.

*We are told that in these complaints, as well as

the system reacts, and the several stages succeed each other regularly, the resolution of the paroxysm may be confidently expected.

In no other point of light, then, can the different elements or stages of fever be rationally considered but as so many requisite modes of action, adopted by the recuperative powers of the system, to throw off the original deleterious impression, and reestablish health. If, in the present state of medical science, we cannot satisfactorily explain this, it is philosophy to adopt it as an ultimate fact. The reason urging us to such adoption is, that the march of a paroxysm of fever is always the same, and the issue of it more or less favourable, according as its elements are more or less regularly developed.

Nor let the excess to which the stage of excitement often rises, and the fatal congestions it too frequently forms or confirms, be regarded as furnishing evidence in any degree contradictory of this view of things. We do not contend for either the omnipotence or perfection of the recuperative powers of the human system. On the contrary, we acknowledge that their efforts are often fruitless, sometimes per-

in other forms of fever, death is sometimes produced during the stage of excitement, by the bursting of blood vessels in the *brain*, and the consequent oppression of that organ by an effusion of blood.

That this event *may* take place, the author neither affirms nor denies. He will only observe that it has never fallen under his notice, and that, being, at furthest, both rare and *accidental*, it does not affect the general principle for which he is contending. It is not to be regarded as constituting a natural link in the chain of events that usually occur.

haps injurious. But we maintain that they exist, that their exertions are generally useful, and that their failure to prove so, is only an exception to a general rule. Extinguish them, and *every complaint will prove fatal.*

Of the elements of fever, the secreting stage being the last, is peculiarly influential in the solution of the paroxysm, and the restoration of health. Of this the reason is sufficiently obvious. The pathology of the complaint consists principally* in a want of equilibrium between the capillaries and the heart; and it is not until the formation of the secreting stage, that this equilibrium is perfectly restored.

It is to be distinctly understood, that the salutary effects of the stage of secretion do not arise from either the nature or amount of the fluids discharged; but from the equalization of excitement and circulation. Centripetal is converted into centrifugal action, internal congestion is removed, the spasm of the capillaries is resolved, and the heart and large blood vessels are relieved from the inordinate fulness that oppressed them.

From the preceding remarks, an important rule of practice is deducible. In the treatment of fever, the chief aim of the practitioner, whose business it is to observe and follow nature, should be the production

*I say "principally," not entirely. In every febrile paroxysm the state of derangement extends to the nervous and other tissues, as well as the vascular. But the want of equilibrium and harmony in the circulatory system appears to be the source from which danger is chiefly to be apprehended. It constitutes the most striking and threatening derangement.

of the secreting stage. This object he must effect with great caution, and by suitable means. He must attain it chiefly by the judicious management of the other stages or elements of the paroxysm, more especially that of excitement. He must bring the action of the system to the *secreting point*. If the excitement, as is sometimes the case, be below that point, it must be raised; and if above it, which, in the commencement of fever, it usually is, reduced. For, unless at a given point of excitement, the glandular structures will not secrete—certainly not in a *salutary manner*—by any means that can be adopted; but, that point being attained, secretion will take place, if not spontaneously, at least in obedience to very moderate means.

The *elements* of fever being *general* or *compound* phenomena, include under them many *special* or *single* ones, denominated *symptoms*.

Although, as already stated, the *former*, as constituting its component parts, are necessarily present in every febrile paroxysm, the case is otherwise in relation to the *latter*. On many occasions, not only are the symptoms exceedingly different, but those which predominate in some cases, are wanting in others. Yet in all instances are the elements alike complete, their perfection, as to form and essence, being in no way impaired by greater or less intensity or fulness. The absence of a few symptoms creates no deficiency in the element or stage of fever in which they are wanting.

Symptoms which may or may not be present, it being practicable for fever to exist without them, are

sickness at stomach, a soreness or sensation of burning in that organ, gastric and intestinal spasms, headache, delirium, coma, epileptic convulsions, pain in the back and loins, *general* soreness, augmented temperature, furred tongue, cutaneous eruptions, preternatural coldness, and several others of minor importance. As no one of these forms an indispensable part of fever, each of them singly, or several of them together, may be wanting, and still the febrile paroxysm be complete.

To demonstrate more clearly the variations in the phenomena produced by the natural progress of this complaint, from its commencement as a local, to its prevalence as a general affection, and thence to the termination of the paroxysm in the secreting stage, it is believed that the following summary may be useful.

Fever is a disease of association, beginning in a local deleterious impression, either irritative or sensitive, made on some part of the solids, and spreading until it becomes general through the medium of sympathy.

To render this analysis the more accurate and intelligible, let the human body be considered as divided into the following systems, which sympathy unites into a living whole, and which, *but for sympathy*, would consist of a collection of *insulated* organs. The cutaneous system, the digestive, the nervous including the brain and spinal marrow, the muscular, the vascular, the absorbent, and the glandular; the latter including every secreting structure.

Let the disease selected for illustration be bilious fever, which appears to originate in an irritative impression made by a peculiar poison on the digestive system. Thence the affection travels by sympathy in the following order.

First to the nervous system, thence to the muscular, thence to the cutaneous, thence to the heart and vascular system, especially the arterial, and finally to the glandular, where its career terminates.

That this is the course which the disease pursues, appears from the uniform succession of its symptoms—I might say, of its elements.

The commencement of the access or second element of fever, which follows immediately the morbid impression, is marked by such uneasiness, hebetude, and general derangement of feeling and intellect, as indicate conclusively, at this early period, a *diseased* affection of the nerves and brain, while the preternatural debility and unfitness for motion which soon follow, announce with equal certainty a *similar* affection of the muscles.

The *rigor*, constituting the third element of fever, has its seat chiefly in the *skin*, as the characteristic symptoms of it appear to evince, which shows that when *it* occurs the disease has reached *that organ*.

That the stage of excitement, or fourth element, proves the complaint to have invaded the heart and blood vessels, will not be questioned; nor is it less obvious and certain that, under the fifth element or secreting stage, the disease has found its way into the glandular structures.

The consideration that the phenomena or elements of fever thus regularly succeed each other in the different systems of the body, satisfactorily proves the complaint to be local in its origin, and sympathetic in its character. It seems also sufficient to authorize the belief, that, in becoming general, it pursues the march already designated.

That the phenomena do thus occur successively, and do not all take place at once, is a fact which must be familiar to every observer. And that they occur in other parts of the body *before* making their appearance in the vascular system, is a circumstance fatal to the humoral pathology. Were an original contamination of the blood the cause of fever, on the heart and blood vessels would its primary effects be necessarily manifested.

For the further illustration of this subject, let the febrile cause be a change in the temperature of the atmosphere from heat to cold, or from dryness to moisture.

By this cause the primary deleterious impression is made on the skin. Thence it travels to the *digestive system*, which must be more or less deranged, else no febrile affection can take place. From this point it pursues, until the close of the paroxysm, the same course already indicated—first, to the nerves and brain, thence to the muscles, thence back to the skin under another form of action, thence to the heart and blood vessels, and lastly to the secreting structures generally.

Is the primary local affection a gun-shot wound, a cut with a sabre, or any other mechanical injury?

Examine the march of the fever that ensues, and you will find it the same.

In the production of every acute febrile affection, it does appear, as already intimated, that the cause, whatever it may be, must subdue the resistance of the digestive organs, and implant disease there, before it can extend its deleterious influence to the other parts of the system.



SECTION III.

Fever a Disease of the whole System.

FROM whatever cause it may arise, or whatever course it may pursue in becoming so, fever, when formed, is a disease of the *whole system*.*

It invades the head, the trunk and the extremities, deranging there the nerves, the muscles, the skin, the chylopoietic organs, the heart and blood vessels, the absorbents, the membranes, the genital organs, and the glandular system generally. It injures also the brain, and deranges, of course, the intellectual functions.

*This expression must be taken, perhaps, with some limitations. As far as our observation informs us, there are certain tissues of the body which appear to be very little if at all affected in cases of ordinary fever. These are the osseous tissue, the cartilaginous, the tendinous, and a few others. But all the more extensive and highly vitalized tissues and systems evidently suffer.

Although in the preceding section, a few facts have been stated confirmatory of the proposition, that fever is a disease of the whole system, a further detail of evidence on this topic is somewhat important to the nature and object of the present inquiry.

Of the derangement of the *nerves*, in *every* case of fever, although in some it is much more strikingly manifested than in others, the testimony is, at once, abundant and satisfactory.

To say nothing of the strong manifestations to this effect, in the modification of disease denominated typhus, the general and often indescribable uneasiness, amounting at times to a soreness of the whole body, experienced by every individual attacked by fever, is conclusive on the subject. That this arises from a derangement of the nerves, particularly of those belonging to the *internal* parts of the body, and constituting what is denominated a sense of *self* or of *being*—*well-being* or *ill-being*—no pathologist will be likely to deny.

Nor is the evidence derived from the altered condition of the *external* senses, less satisfactory. There are few cases of fever of any severity, in which vision and hearing are not more or less deranged. The acuteness of those senses is either heightened or diminished, or their sensibility is so altered, that *most things* seem different to the *eye*, and *most sounds* to the *ear*, from what they do in health. For the truth of this, an appeal may be safely and confidently made to the experience of the sick.

In relation to smell, taste, and touch, the same thing may be said. Those senses also are materi-

ally changed in their susceptibilities and functions, by the disease under consideration.

To febrile patients many odours, agreeable in health, become exceedingly offensive; so altered also is their taste, that their favourite articles of food and drink are insipid or nauseating to them; and such is the derangement of their *nerves of feeling*, that many objects of touch produce sensations altogether unnatural.

The pain so distressing which febrile patients often experience in the back, especially in the lumbar region, would seem to be the result, at least in part, of a diseased condition of the spinal marrow. Nor can a doubt be admitted that the defective and anxious respiration which forms such a prominent symptom in the access of fever, is essentially connected with nervous derangement.

Of the *intellect* of those attacked by fever, it may be safely asserted that it is *always affected*. If it is not *deranged*, in the usual acceptation of the term, it is preternaturally diminished or increased in its strength and intensity, or in some way perverted from its healthy condition.

Indeed radically dependant as it is on the *state of the brain*—as much so as the bile is on that of the liver, or the urine on that of the kidneys—it is not possible that the case can be otherwise. If an unsound liver be always accompanied by unsound bile, or by a quantity of it preternaturally increased or diminished, so will a diseased brain be always productive of a diseased intellect. But, that an organ so large, and possessing such an extensive range of

sympathies as the brain does, should remain uninjured amidst the universal commotion of fever, is impossible. To the truth of this, the symptoms of the sick, in common with the appearances exhibited by dead bodies, bear ample testimony. Indeed if there are any organs more certainly affected by fever than others, they are the brain and nerves, the stomach and liver, the heart and blood vessels, the skin, and the secreting structures generally.

To offer further evidence of the existence of *gastric* derangement in febrile affections, might seem superfluous. Such derangement is satisfactorily indicated by every phenomenon that bears on the subject. Anorexia, flatulency, nausea, vomiting—soreness, burning, or distress about the scrobiculus cordis, or some other form of gastric affection, are universal attendants on paroxysms of fever. This affection consists at times in an appetite preternaturally keen and craving.

So powerful a protector, as has been already stated, is the stomach to the other parts of the system, that unless its functions be disordered, and its resistance previously subdued, no febrile disease can be formed. In its progress from *local* to *general*, fever must pass through that organ, generating derangement there, as an essential link in the chain of disease. If that link be wanting, the chain is incomplete.

While the digestive apparatus continues sound, its healthy sympathies sustain in health the other parts of the body. Derange it, and its sympathies become deleterious to other parts, in the same degree, in

which they had been salutary. It is thus a centre of sympathetic governance, from which fever receives its charter of existence, and by which that charter may be modified or revoked. Hence its supreme importance as an object of attention to the practical physician. Keep it in a healthy condition, you prevent fever; act on it skilfully during the disease, you do much towards its removal.

The general debility and inaptitude to motion, always experienced during the paroxysm of fever, has been already referred to as a phenomenon indicative of derangement in the muscular system.

To the same, in part,* may the imperfect vision of febrile patients be, in some cases, attributed.

Objects cannot be seen with the same perspicuity and distinctness at *different* distances, unless the position and figure of the eye be so altered as to be accommodated alike to each of them. But such alterations are necessarily effected by muscular action. During the severity of a febrile paroxysm, the muscles of the eye, in common with the other muscles of the body, lose their facility and perfection of motion. Hence they necessarily fail to produce in that organ the several conditions of compression, shape, and direction, adapted to perfect vision at different distances.

The frequent want of lustre and vivacity in the febrile eye is also attributable chiefly to the inaction,

*I say "in part," because the optic nerve may suffer at times, in common with the other nerves of the body.

from debility or torpor, of its muscles of motion. That for its varied expression, that organ is indebted chiefly to muscular action, will not be denied. When that action, then, is feeble or wanting, the expression must be defective in a corresponding degree.

There is reason to believe, that a deficiency of hearing, in cases of fever, is owing, at times, to an inability in the muscles concerned to give the requisite tension to the auditory apparatus. At other times, to a deranged condition of the auditory nerves.

Costiveness, a frequent symptom of fever, is attributable, in part, to a want of action, or an enfeebled action, in the muscular coat of the intestines.

From a similar condition of the muscles of the bladder, febrile patients oftentimes evacuate their urine with difficulty.

To occupy the time of the reader by an exhibition of further evidence of the fact, that this disease attacks and deranges the skin, which often receives the first impression of the febrile cause, would be superfluous. Such evidence presents itself abundantly to every observer. To wave considerations of higher moment, the increase of temperature, in which, with other parts of the body, the skin participates, is alone conclusive on the subject.

That febrile affections extend to the absorbent system their deleterious influence, satisfactorily appears from the rapid progress of emaciation—the effect of excessive absorption—which occurs in most of them, and from hydropic depositions—the result of diminished absorption—which take place in a few

That fever reaches also the genital system, is demonstrated by the failure of the functions of the organs that compose it, during the continuance of that disease.

Of the uniform and deep affection of the heart and blood vessels which fever produces, evidence is presented abundantly in the stage of excitement.

That the glandular system participates also in the general derangement, is proved alike by the phenomena of the commencement and close of the disease.

In the *access* of fever, glandular action is *deficient*, as we learn from the disappearance, during the time, of the various secretions of the body, not excepting that of pus from open ulcers, and of saliva during the constitutional affection from mercury. In the *decline* of the disease, the action of the glands is *excessive*, as is manifested by the superabundant amount of secreted fluids, which, in that stage of fever, usually occurs. This derangement of the system further appears from the novel and vitiated condition of the several products of secretory action. To the existence of such vitiation, the bile, the urine, and the mucous secretions amply testify.

These remarks may be regarded as applying to the membranes of the body, all of which are of a glandular character, and experience, both in their structure and functions, the changes incident to other glands.

Even the osseous and the pilous systems, being essentially connected with secretory action, are often participators in the ravages of fever. If the source be disordered, the product must suffer.

From the interest attached to it, as a topic in pathology, and its great importance as a guide in practice, the diseased pulse, which constitutes such a prominent symptom of fever, is entitled to a few additional remarks.

For its preternatural frequency, fulness, and force, it is indebted to the action of the heart. Its tension and hardness, as well as its contracted and wiry character, arise from the peculiar state of the arteries. When in a healthy condition, the *large* arteries do but little to *promote* the circulation of the blood, that function *through them* being performed almost entirely by the action of the heart; when diseased, their agency tends to *impede* it.

In the number and times of its beats, the pulse *necessarily* corresponds with the contractions of the ventricles of the heart. Bearing towards each other the relation of cause and effect, these movements are and *must be, alike in frequency*. Nor is it true, as is often asserted, that the pulse, in one arm, is ever more frequent than it is in the other. In both arms, and in every other part of the body, it moves only in obedience to the contractions of the heart; consequently its beats are, in all parts, *synchronous with those contractions*, and with each other. When, therefore, the heart contracts frequently, the pulse is frequent, and the reverse. If the heart contract with such vigor and effect as completely to empty its cavities of their blood, the pulse is full, and usually strong. When the cavities are not thus emptied, the volume and force of the pulse are proportionably diminished.

A preternatural frequency in the contractions of the heart arises generally either from *an excess of irritability in the organ itself*, or a *superabundant accumulation of blood in its cavities*. The former condition of it would seem to exist in *carditis*, or inflammation of the heart, as well as in some of its sympathetic affections; the latter, in fever generally, more especially in its stages of *access* and *rigor**. During *those stages* of every febrile paroxysm, the cavities of the heart are surcharged with blood, which, by the morbid and irregular action of the system, is forcibly thrown from the circumference towards the centre, and, in some measure, confined there. Struggling to free itself from the oppressive load, the organ contracts with frequency and all the force it can exert; and hence the formation of the stage of excitement. If the heart empty itself *completely* at each exertion, its contractions are less frequent; but more so, if it empty itself but partially. When, as already observed, that organ is inflamed, it is preternaturally irritable, for the same reason which accumulates irritability in every other inflamed organ. In this case, without any superabundance of blood in its cavities, its contractions must be necessarily preternaturally frequent.

The tension, hardness, and *wire-like* feel of the pulse, arise from an actual *contraction* of the arte-

*In the stage of excitement, when the system is passing to a state of collapse, and, in a particular manner, during the existence of collapse, the frequency of the pulse is explicable on the same ground.

ry—a condensing of its parietes, and a lessening of its caliber, which prevent the blood from flowing freely through it. Hence a hard and tense pulse is rarely a full one.

This spasmodic condition—for such it appears to be—of the larger arteries, cooperates with the contraction of the capillaries to throw the blood superabundantly on the heart. When accompanied by a quickness or short jerk in the beat of the pulse, it testifies to the existence of topical inflammation; a point of information in no small degree important in practical medicine.

On this subject it may not be without some interest further to observe, that, contrary to general belief in relation to it, the heat of the pulse appears to be exclusively the work of the heart; and does not depend on any active expansion and contraction of the arterial tube. However heterodox the assertion may appear to many, it is notwithstanding true, that, in the circulation of the blood, the larger arteries experience neither an augmentation nor a diminution of their diameter. At each contraction of the heart, they are perceptibly elongated; but, in the dimension of their caliber, they suffer no visible change, nor can any pulsation be felt in them, unless under a pressure which narrows their diameter. That, from their *tonicity*, they have a constant *tendency* to contract, cannot be doubted. And that they do contract, when partially or entirely emptied of their blood, is known to every physiological observer. Nor is it less certain, as can be easily made to appear, that the *tendency* or *constant effort* of the ar-

teries to contract, contributes its part to the circulatory process. The expansion of these tubes could be produced by nothing but the influence of a force or power stronger than their disposition to contract, and acting in opposition to it. But such a power the heart cannot apply, unless the circulation of the blood be impeded.

When in a healthy condition, the arterial tubes offer no resistance to the circulation of the blood, because they are in harmony with the action of the heart, the influence of their tonicity or tendency to contract being *centrifugal*. But during a febrile paroxysm the case is otherwise. By a contraction or lessening of their diameters, they unite with the capillaries in their conflict with the heart, and by a state of action now become *centripetal*, prevent the blood from flowing in the quantities requisite, to the surface and extremities of the body. To subdue this contraction and general retrograde or centripetal tendency, constitutes a leading object in the treatment of febrile diseases.

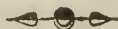
As far as he has proceeded in this analysis, the author ventures to hope, that both the general course he has pursued, and the particular expositions he has given, are calculated for the attainment of the end he has in view—the development of correct principles in relation to the pathology, and correct rules of practice with regard to the treatment, of febrile complaints. It is only, as he conceives, by proceeding as he has done—by commencing with the *primary impression* of fever, advancing with it through its successive stages, marking its progress

from one system of the body to another, and accompanying it to its termination in the stage of secretion, that its true philosophy can be fully understood and developed, and a successful plan for its removal devised.

Observe a case of fever during the stage of excitement, or during any other *given insulated* stage, and it is an object so obscure, and of such uncertainty, that but little of useful knowledge can be acquired from studying it. Examine in this way *each* of its stages or elements *singly*, without attending to their succession and relative connection, and the result will be the same—the information received from the inquiry will be exceedingly limited in a pathological, and by no means important in a practical point of view. Consider all its stages singly but *progressively*, as a regular series of phenomena bearing to each other the relation of cause and effect, and not a little of the darkness that enveloped the subject is removed. Under this mode of examination the several elements or members of the disease, shedding on each other their mutual lights, disclose a sufficiency of the form, character, tendency, and uses of the whole, to indicate the object which nature has in view in the composition of the complaint. It is thus that by examining in its *totality* an *animal* or a well formed *machine*, we discover with facility the structure, the philosophy, and the uses of *each*, while an inspection of them in *detached fragments*, imparts to us no useful knowledge of *either*. If it is true, that, as practical physicians, we act most rationally and to the best effect when we follow nature, it is no less

so, that to be enabled to follow her, we must learn her course by tracing her footsteps. Nor is there any other procedure that can lead us to an acquaintance with *genuine science*, which is but another form of expression for a *knowledge of what nature does, and of the manner in which she does it—a knowledge of phenomena, and the laws that govern them.*

The author is, therefore, encouraged in the belief, that the plan he is pursuing, if executed with sufficient ability, is well calculated to throw on the pathology of fever, and the general indications as to its treatment, such lights and illustrations, as may best qualify the educated physician so to direct and vary his practice, as to adapt it to all the modifications of the disease.



SECTION IV.

Of the Division of Fever.

ON this topic it is the intention of the author to be very limited, in his remarks. Into the consideration of it he will enter so far only, as may be requisite for the further development of the philosophy of the disease. He purposes, therefore, to confine himself chiefly to an examination of that arrangement which divides fever into *Idiopathic* and *Symptomatic*.

By the *former* is meant, in the words of a great nosologist, "*Pyrexia sine morbo locali primario;*" a fever which, not arising from a primary local affection, is *general* from the beginning.

By the *latter*, a fever which does arise from a primary local affection, the general disease being nothing but an assemblage of symptoms of the local.

It is a question of no little interest, as a matter of science, and of equal moment in relation to practice, whether, consistently with these definitions, there exist such a disease as an idiopathic fever? Whether, according to the nature of deleterious causes, and the principles on which vital phenomena depend, it is possible for a febrile disease to exist, except as the consequence of a primary local affection?

To these inquiries a negative reply may be confidently rendered. That such a complaint as that referred to, under the denomination of idiopathic fever, has no existence in nature, and ought not, therefore, to find a place in the vocabularies of medicine, appears satisfactorily from the following considerations.

1. All fevers begin in the *solids*, inasmuch as *they*, surrounding and completely protecting the fluids, are alone exposed to the *first* impression of febrile causes.

This proposition is so perfectly obvious, that simply to state it is definitely to prove it. To every physician who is even moderately versed in the science of his profession, and free from the prejudices of the school of humoralism, it can scarcely fail to be intuitively plain. To dwell, therefore, at present, on the illustration and establishment of it, would be a waste of time.

2. No febrile cause can act *primarily* on the solids of the body, *beyond the sphere of its actual contact*.

This proposition being self-evident, will not be controverted, but must be regarded in the light of an axiom in medicine.

3. No febrile causes with which we are acquainted, can come into contact with any but a *very limited portion* of the solids.

There are but *four* parts with which such causes can come into contact at all, so as to make on them a *primary impression*. These are, the *skin*, the *internal surface* of the *primæ viæ*, the *schneiderian membrane* generally lining the nares, trachea, and lungs, and the *brain*. To no other portion of the solids can they have *immediate access*.

That this proposition also is true, will appear conclusively from a brief examination of it.

The chief, if not the only causes productive of those fevers denominated *idiopathic*, are infection, and, as some allege, contagion, in a gaseous or liquid form, heat, cold, vicissitudes in the atmosphere, humidity, unwholesome food and drink, poisonous matters swallowed accidentally or by design, and the passions of the mind.

To enlightened and philosophical physicians, who examine the relation of cause and effect, this enumeration alone must prove satisfactory as to the truth of the proposition to which it relates.

All liquid and gaseous substances, whether contagious or infectious, poisonous or otherwise, are necessarily confined in their *immediate contact* and *primary action* to the skin, the *schneiderian mem-*

brane, and the internal lining of the alimentary canal.*

Heat, cold, vicissitudes in the atmosphere, and humidity, can act *primarily* on the *skin alone*; or, at furthest, on the same parts with liquid and gaseous substances. Beyond this their immediate contact cannot extend.

Unwholesome food and drink, and poisonous matters swallowed, in whatever form, or for whatever purpose, are necessarily confined, in their *primary action*, to some portion of the alimentary canal.

These several propositions are so clear in themselves, that to offer proof of them, would not only be superfluous, but would weaken their claim to our belief, by admitting the possibility that they may be unfounded.

Nor is it less obvious and certain, that the *first* impression made by the passions of the mind, is confined to the brain, which is at once their organ and seat.

If there be any other causes productive of fever, it can be satisfactorily shown, by a fair examination of them, that, in their primary action, they are as necessarily local as those that have been cited.

From these considerations, regarded as premises, the inference is irresistible, not only that fever is

*We are constantly swallowing air with our food and our saliva. If, therefore, there be afloat in the atmosphere a *gaseous poison*, that also must be necessarily swallowed, and brought into contact with the mucous lining of the stomach, and other portions of the *primæ viæ*.

always *accompanied* by a *primary* local affection, but that it is *necessarily produced by it*. Without such an affection, no more can the disease arise and spread, than a tree can spring from the ground and flourish without a root, a stream flow without a fountain, or any other effect take place, without the influence of its proper cause.

Will it still be alleged, as it often has been, that through the skin, the lungs, or some portion of the alimentary canal, febrile poisons gain admission into the blood, corrupt that first, and afterwards produce disease in the solids?

To this the reply is obvious and conclusive. If those poisons, in passing through the solids, in a *pure* and *undiluted state*, do them no harm, they will not be likely to act more powerfully and produce greater mischief, after they have been *weakened by a mixture with the blood*. To contend that they do or might thus act, is to turn sophist and advocate an absurdity.* As well might it be maintained that, in any other case, a weaker cause may effect what a strong-

*When strictly analysed, the proposition of the humoralists, on this topic, may be thus expressed.

Febrile poisons in a state of purity cannot injure the solids when first passing through them to reach the blood. But having gained admission into that fluid and mingled with it, they return, *in this state of dilution*, and produce disease in parts which were proof against their action when *undiluted*.

If there be in this statement any misrepresentation, let the humoralists show wherein it consists. And if there be none, it is incumbent on them to make it appear that the proposition as stated com-

er one cannot—that a drop of sulphuric acid diffused through several gallons of water, is better calculated to irritate and inflame a denuded portion of the cutis vera, than an undiluted drop.

But, far from being true that, without injuring the solids through which they pass, febrile poisons first enter the blood and then create disease, there is no reason to believe that they ever pass into that fluid at all. On the contrary, that the opposite opinion is true, may be satisfactorily proved.

Before the actual formation of fever, no one ventures now to contend that the blood is contaminated. Nor, even during the existence of the disease in its highest degree of malignity and violence, has a poisonous contamination of that fluid ever been detected. The humoral notions of its putrefactive and acrimonious conditions are too visionary to be seriously considered. Inoculate with the blood of a febrile patient, or introduce it into the veins of a person in health, and in neither way can you succeed in communicating the existing complaint. But, it might seem superfluous to add, that were it impregnated with the poison of the disease, the case would be otherwise.

. In further defence of the ground here assumed, it may be stated as a truth, amounting, perhaps, to an axiom in physiology, that through neither of the sur-

ports with reason. If they can do neither, their only alternative is, to abandon their hypothesis and embrace truth, or obstinately adhere to *demonstrated error*.

faces with which they can come into contact—the *skin*, the *schneiderian membrane*, or the *mucous lining of the alimentary canal*—are poisonous substances permitted to enter the blood in an *active state*. If they enter it through those channels *at all*, it is not until, by the mutative and assimilating powers of the living solids through which they pass, they have been completely deprived of their deleterious qualities.

In relation to heat, cold, moisture, and vicissitudes in the atmosphere, no one will deny that they, in their *primary* action, are confined exclusively to the surface of the body. Whether the climate be torrid or frigid, or the weather hot, cold, or variable, until the fever is formed, the blood and all the internal solids maintain with uniformity the same temperature, and exhibit the same degree of humidity. To the skin alone is the primitive action of the causes limited.

That during fever the blood sustains certain morbid changes, is obvious to every one. But these are the *effect* of the disease, not its *cause*. The blood is as really the creature of the solids, as the fruit is of the tree that bears it, the machine, of the artist that formed it, or the stream, of the fountain from which it flows. That fluid, *as a fluid*, is literally *created* by the *action* of the solids, and cannot be sound if that action be morbid. But it suffers *secondarily* by the *diseased action of the solids alone*, and not by means of an *original contamination*.

That disease may be aggravated, modified, and, *in a few cases, perhaps*, extended, by the deleterious

changes which the fluids of the body undergo in consequence of the morbid action of the solids, will not be denied.

The blood and the secreted fluids, when thus changed and vitiated, become themselves morbid agents, capable of producing malign impressions on those parts of the body with which they come into contact. On this ground they *may* be instrumental not only in aggravating and extending *existing* disease, but even, perhaps, in the production of a *new* one. But for whatever deleterious properties they may possess, they are indebted exclusively to some deteriorating influence of the solids. Without such influence they would remain healthy, as certainly as, when not assailed by accident, sound fruit is the product of a sound tree, or as any other effect corresponds with its cause.

Fever resulting from infection or contagion, is produced by an impression exclusively *irritative*—an impression, which, not being *felt*, its existence is recognized, not by the *senses*, but by the powers of reason and philosophical research.* On this account alone *its* existence is *not* universally admitted, while the existence of *sensitive* impression *is*. All men *feel*; but all men do not *reason as philosophers*. While, therefore, they admit, without hesitation, and in every instance, the evidence of sense, they receive reluctantly, or entirely reject or misinterpret that evidence, which, disclosed and collected by a laborious

*Perhaps its existence is established still more conclusively by post-mortem examinations.

process of inquiry, is cognizable only by the powers of the intellect.

Reverse this state of things, so that all men shall *feel little* and *reason much*, and the issue will be not only different but *opposite*. The evidence of *sense* will then be often rejected, and that of *reason* universally received. The existence of *irritative* impressions will be promptly admitted, and that of *sensative* ones held in doubt or entirely discredited. It will then be conceded that bilious fever in all its variety, including yellow fever and pestis vera, typhus fever, scarlatina, small pox and measles, arise from a primary local impression, but that those fevers resulting from burns and mechanical injuries do not. Of course the latter will be called *idiopathic*, and the former *symptomatic*.

Examine a febrile disease, of any description, that can be traced with accuracy and certainty to its origin, and it will be found to be derived from a primary local affection.

Let the example selected be a fever produced by the swallowing of oxid of arsenic, muriate of mercury, or any other mineral poison. This arises indubitably from a primary morbid impression on the *stomach*, the phenomena, or secondary affections that give character to it, being as purely symptomatic, as if the whole had resulted from a wound produced in *that organ* by a bayonet or a bullet. Yet, so similar, in all respects, is this complaint, to those originating from marsh miasma, that the author has known a case of disease arising from the swallowing of muriate of mercury, to be mistaken by a physician of

great experience, sagacity and judgment, for yellow fever. It perfectly resembled that complaint, when highly malignant, in its access and stage of excitement, the colour of the skin, the discharges from the stomach and bowels, the appearance of the eyes and countenance generally, and in the occurrence of hemorrhage from various parts of the body. But if, by a local impression on the stomach, muriate of mercury can produce a malignant fever, why not a poison of any other description, provided it possess sufficient strength? Why not the poison of common bilious fever, typhus fever, scarlatina, or the plague? If there exist any reason why, in the one case, the deleterious substance should produce disease by acting locally on the stomach, and in the others by making its way into the blood, the author confesses himself unable to discover it, and will feel obliged and instructed by those who may indicate it to him.

Is the fever, which is the subject of inquiry, generated by the influence of the passions of the mind? Examine carefully its rise and progress, and its origin will be found in a primary morbid impression on the brain, communicated, by *sympathy*, to the digestive system, and thence, on the same principle, to the other parts of the body. It would be an outrage on sound physiology to allege, that, in the first instance, any other part but the brain *can* be affected by the passions of the mind.

As a further evidence of the local origin of fever, every one attacked by that complaint, who is sufficiently observant of his own feelings, is conscious of

the existence of a primary local derangement. His conviction to this effect arises from pain, uneasiness, or preternatural feelings of some description, which he experiences in the stomach, the head, the thorax, the back, the skin, or in some other part of the body, previously to the occurrence of the general affection. For the truth of this, an appeal may be confidently made to the recollection of those who have suffered from disease.

Indeed when the subject is deliberately examined and faithfully analysed, a belief in the original locality of fever would seem to be a primitive feeling of the mind. The proposition is so palpable that it is instinctively received as soon as it is presented to the inquirer, and, like other fundamental truths, may be considered, in the impression it produces, as immediate, universal, and irresistible.

The feelings of the sick satisfactorily indicate, that no fever *runs its course* without being marked by some local affection; and that no one can *prove fatal* without it, *post-mortem* dissections abundantly testify.

There exist still other considerations, tending to the establishment of a belief in the local origin of febrile diseases.

Every phenomenon which bears on the subject shows, that fever arises *immediately from congestion*,*

*According to the part in which the congestion is situated, is the character of the disease which it produces.

In those febrile complaints that have been usually denominated *idiopathic*, viz. bilious fever in all its varieties, yellow fever, *pestis vera*, typhus fever, and

produced by a primary deleterious impression. But congestion is *necessarily a local affection*. It consists in a preternatural accumulation of blood in some *part* of the body. A *general* congestion can have no existence. If a *superabundance* of blood be thrown into any one part of the body, it must be done by producing a *deficiency* of it in some other part. And to reverse the position, a *deficiency* in one part indicates a *superabundance* in some other.

The paleness of countenance, shrinking of the features, diminution of the extremities, and the retreat of the blood from the surface of the body generally, which always take place on the approach of fever,

scarlatina, whether excitive, inflammatory, or congestive, the congestion exists in the portal circle generally, its more immediate seat being the mucous lining of the stomach.

In pneumonic febrile affections, it is situated in some part of the thoracic viscera—the pleura, the substance of the lungs, or the schneiderian membrane which lines them.

In true cephalic fever, its situation is either the substance or membranes of the brain.

In genuine rheumatic fever, its seat is in the muscular system or its appendages, or in some of the membranes connected with the joints.

If asked in what way the original deleterious impression produces congestion, my answer would be, that, in addition to its generating a morbid irritation, it so far debilitates the vessels of the part where it is made, that they are unable to act with sufficient vigor to force the blood onward in its course of circulation as rapidly as it is thrown into them. Hence it must necessarily accumulate.

are demonstrative of the existence of internal congestion. If, by a state of centripetal action, the blood be repelled from *without*, it must necessarily be accumulated in the *internal parts*. Without a congestion thus produced, no fever could ever make its appearance. Nor would it be either requisite, or consistent with the economy of nature that it should.

Fever, as already stated, is an effort of the healing or restorative powers of the system to remove a morbid *affection*. That affection is *internal congestion*. If the congestion did not exist, the effort would not be made, as nature never engages in an unnecessary struggle. That this is true appears from the fact, that when the congestion is removed, the struggle ceases.

In relation to this point, the example of a paroxysm of intermitting fever would seem conclusive. At the commencement of that complaint, every circumstance connected with it announces the existence of *internal congestion*. But as soon as that affection is removed by means of the stages of excitement and secretion, for which purpose they are particularly intended, the paroxysm terminates.

The same is true of fever in general. Every febrile complaint, as heretofore stated, consists of one or more paroxysms. The paroxysm is the result of internal congestion produced by the primary morbid impression. By nature, the curative powers are called into action to resolve this congestion. Nor does the effort cease until, by secretion, the object is effected, or the system sinks exhausted in the struggle. Whether the paroxysm be long or short—be its

duration twelve hours, eighteen hours, three days, five days, seven days, or three weeks, its cause and origin are the same, it is governed by the same principles, and terminates for the same reason.

If the internal congestion be removed entirely,* the febrile commotion ceases altogether, and the state of apyrexia that follows is complete. This is exemplified in simple intermittents.

But in case the congestion be removed only in part, the febrile commotion abates but in part, and the state of apyrexia is incomplete. Of this we have an example in remitting fever.

In the long compound paroxysms of yellow fever, typhus fever, and scarlatina, the same principles prevail. In each of them the febrile commotion ex-

*Whether, at the time of the termination of a paroxysm of intermitting fever, the internal congestion which produced it be *completely* removed, is *doubtful*. A slight uneasiness which still remains in the system, shows that all *within* is not right.

Admitting the congestion to *be* removed, the solution is but *temporary*. Owing to the weakened condition of the vessels of the part, united to some remaining irritation, it soon returns. And cotemporaneous with *its return* would be *that* of another paroxysm, were it not that the exhausted excitability of the system requires some time before it is sufficiently restored to admit of another course of febrile action—perhaps I might say, to make another recuperative effort.

Why under one form of intermitting fever twelve hours only are requisite for this restoration, under another twenty-four hours, and under a third, thirty-six, is, in the present state of medical science, a point of transcendentalism, which cannot be resolved.

eited by congestion, continues with but little abatement, until nature gives way, or the congestion is removed by the stage of secretion.

As an inference from the foregoing considerations, it may be confidently stated, that, if there be any thing certain in pathology, it is, that fever arises from a primary local affection, and is essentially a disease of association or sympathy. In the usual acceptation of the term, then, an *idiopathic* fever has no existence. If the disease be called *symptomatic* in one case, it should be so called in every case; for it is always a *general derangement* proceeding from a *local cause*.

But the local affection is not always *inflammatory*.* Those who contend that it is, are mistaken. It is marked by three grades, only one of which is truly inflammatory.

The first and mildest form of the local affection is a degree of congestion *below* that of inflammation. This can be resolved by a mere increase of excitement, without any true *phlogistic* action.

The third and highest degree of the local affection prevents reaction, by paralysing the system, and is, therefore, *beyond* the point of inflammation. Unless relieved by skilful treatment, this grade is always fatal.

It is the second or middle degree alone that gives rise to inflammation. Here, the congestion, not so

*By some of the most distinguished pathologists of the day, topical membranous *inflammation* is considered essential to the production of fever.

excessive as to paralyse the system, is too deep to be removed by reaction short of inflammatory.*

Of these three grades of congestion and disease, examples present themselves in the three well known forms of scarlet fever.

In scarlatina simplex, there is no inflammation, because the primary local affection is too slight to produce it.

In scarlatina inflammatoria there is inflammation, as the term itself imports, because the primary affection is severe.

In scarlatina congestiva, usually denominated scarlatina maligna, the primary affection is so malignant and paralyzing, as to prevent that degree of reaction in which inflammation consists.

A regular paroxysm of intermitting fever furnishes evidence sufficient to convince us that that complaint does not arise from an affection of the stomach *actually inflammatory*.

Real gastric inflammation cannot, like the local affection producing intermitting fever, be removed in

*This view of the original local impression productive of fever, resembles not a little the division of that complaint by Dr. Armstrong into *excitive*, *inflammatory*, and *congestive*.

But, to those who received his instructions in medicine it is perfectly known, that the author entertained and inculcated the same view several years before the very excellent writings of Dr. Armstrong had made their appearance.

To those productions he is much indebted for their *support* of his opinions, but not for originally *suggesting* them.

a few hours, by any process that man or even nature herself can institute. Nor is a paroxysm of intermittent necessarily marked by that irritability, burning, and soreness of the organ, nor with that peculiar state of the pulse, which always accompany inflammation of the stomach.

The remedies, moreover, that cure the complaint, are incompatible with the true *phlogistic* diathesis.



SECTION V.

Of the Treatment of Fever.

To give a succinct view of the leading indications of cure that claim the attention of the practitioner in the treatment of febrile diseases, and the general means of answering them, constitutes the object of this section.

As preparatory to this, and that the philosophy of the subject may be the better understood, it is important to observe, that there are four attributes or modes of action of living matter, through which alone the cure of fever can ever be effected. These are *Irritability, Sensibility, Sympathy*, and the *Vis medicatrix* or *recuperative power*.

Extinguish irritability and sensibility, and remediate agents can make *no impression*.

Remove sympathy, and every impression will be necessarily a *local one*, the system at large being in no degree affected by it.

Destroy the recuperative or healing power of nature, and the cure of disease will be rendered impossible. For by that power is the *actual cure* in every case *completed*. Remedies *weaken* existing morbid action, or transmute it into that of a different description; but nature alone can finally eradicate it, and institute healthy action in its place.

If administered during health, all effective medicinal substances prove injurious. By none of them, therefore, can the real action of health be restored.

The laws and powers of these attributes, then, all physicians should carefully study; because, to become enlightened and successful practitioners, they *must* be acquainted with them.

On this topic the author will only further observe, that by *irritability* he means a mere susceptibility of *impression*, united to a capability of organic action.

By *sensibility*, a susceptibility of *sensative impression*, i. e. impression connected with *feeling*, together with the action, nervous and cerebral, necessarily associated with it.

By *sympathy*, that attribute of living matter, according to which, *impression* or *action* in one part, produces impression or action in another.

By the *vis medicatrix naturæ*, that property according to which the various parts of a living being unite in their action to prevent or remove a noxious impression, or repair the injury it has produced.

These several terms are intended to be expressive of classes of phenomena presented by *living* matter, as gravitation, repulsion, attraction and magnetism are, of those that *dead* matter presents.

By *indication* is meant a manifestation of the course to be pursued, or the change to be produced, with a view to convert diseased into healthy action. By *means*, the remediate agents employed for that purpose.

From this presentation of the subject, it may possibly be supposed, that both the indications and means will be represented as greatly diversified, the modes of curing and alleviating fever being regarded as very numerous.

This is a mistake, injurious alike, as the author apprehends, in science and practice; because, instead of concentrating the views of the practitioner, and rendering them determinate, the sentiment tends to scatter and unsettle them—It directs them *loosely* to *many* points, instead of fixing them with *intensity* on *a few*. It is an error similar to that which an unskilful commander of a besieging army would commit, were he, in order to effect a breach, to direct his artillery to play on a large extent of wall, instead of concentrating its fire on a small one.

If, under the numerous modifications it may put on, and all the various aspects it may present, fever be regarded as so many distinct diseases, to be treated through an equal number of *indications*, and by *means* possessing supposed specific *correspondencies* to them, then will both the view and the treatment of it be greatly diversified, and confusion in principle and a want of success in practice, cannot fail to be the result. To proceed thus in relation to it, would be to turn the attention from *internals* to *externals*, and from *causes* to *effects*, not to say from

realities to mere *appearances*. It would be to prescribe for *symptoms* instead of their *sources*—to lop the branches of the tree, in attempting to destroy it, instead of vigorously assailing its root. It would be, in fact, to deal in that puny detail, which, originating in a want of the knowledge of principle, degrades those who practise it, and leads, for the most part, to an unfavourable issue.

But if, instead of such detail, the subject be viewed through the general principles that evidently govern it, the indications in fever will be found to be few; and its treatment simple.

If the disease arise from a state of broken and unbalanced circulation and excitement, the leading indication is to restore and equalize them.

If it be marked by a state of *centripetal* action, giving rise to internal congestion or accumulation of blood, the indication is, to resolve that congestion, by rendering the action of the system *centrifugal*.

If it be accompanied by a want of secretion and a drying up of the different excretories of the body, in consequence of a *war* or state of conflict between the capillaries and the heart, the indication is to terminate the conflict, by removing the spasm from the capillaries, and thus restoring to the secreting structures their natural action.

To include these several views in one, if fever consist in a state of oppression of the internal and important parts of the body, by a superabundance of blood forcibly thrown on them from without, by means of morbid external action, the indication is to relieve those parts, and recall the blood to its pro-

per channels, by changing the action which forced it from them. In relation to the best mode of effecting these objects, *nature* is our surest and safest instructress.

For the ultimate removal of the internal congestion from which fever arises, *she* evidently has recourse to the *secreting stage* of that complaint. To the production of that stage all her efforts in febrile diseases are evidently directed. The rigor or cold stage augments the congestion, from which it has itself originated, that augmentation gives rise to the stage of excitement, and the stage of excitement produces, by a process intelligible and natural, the stage of secretion.

In his treatment of fever, then, let the practitioner of medicine, in imitation of nature, aim at the production of the *secreting stage*.* Let him so regulate the other stages, and so manage all concomitant circumstances, as to attain *this* with the greatest certainty, expedition and safety.

For the effectuating of this general and governing indication, a few subordinate ones must be faithfully executed.

1. If the remote or the exciting causes of the disease be still in action, they must, if practicable, be removed, or patients should be carried beyond the sphere of their influence. Could this be effected

*Whatever remediate agents tend to the production of this stage, call them by any name you please, are true *febrifuges*. Those that do not thus tend, ought not to be so denominated, because they have no influence in the removal of fever.

in yellow and other forms of bilious fever, without too much agitating and fatiguing the sick by the removal, it would contribute not a little to their recovery. That the continued operation on the system of the same poison that produced the disease must aggravate and protract it, can scarcely be doubted.

2. All irritating impressions, whether they be made on the internal or the external parts of the body, should be carefully withdrawn.

3. In a particular manner, the arterial action must be so regulated, as to be brought to what may be denominated the *secreting point*. Unless this be effected, secretion cannot be excited without the employment of such means as will render it prejudicial rather than useful. Secretion of a salutary character rarely takes place in an adult, if the pulse exceed ninety beats in a minute, or the temperature of the body be above 100 degrees of Fahrenheit. The same is true, if either the pulse or temperature or both be below the standard of health. If to this rule exceptions occur, they are *but* exceptions, and should be so considered.

In relation to the removal of the causes of fever, no specific directions can be here detailed. That object must be attained by an adoption of measures suited to the nature and circumstances of particular cases. And in concerting and applying those measures, the judgment of the physician in attendance must direct.

Irritating and aggravating causes, apart from productive ones, may act on the skin or the external senses. Such are temperature either too high or too

low, improper clothing or bed-covering, light or sound in such a degree as to be painful or disagreeable, and strong or offensive odours or tastes. All these should be so regulated as not too powerfully to impress the system, and add to the general amount of excitement. So must exercise, corporeal and mental, both of which, in undue quantities, prove highly prejudicial. Under this head is included conversation, by an indiscreet indulgence in which febrile patients are oftentimes injured.

The same is true of diet and drink, which, unless skilfully adjusted, prove the worst of irritants. When unsuitable either in quantity or quality, no medicinal articles can prevent or counteract their pernicious effects. In fevers of *excitement*, more especially if *inflammation* exists, it is impossible to err by rendering them too mild. That diet be very limited in quantity, is also essential.

Another class of irritants exceedingly injurious consists of certain depraved secretions acting on the stomach, and other portions of the alimentary canal. These are to be removed by emetics and cathartics, judiciously selected and administered with skill. A proper amount of diluting drinks is well calculated to aid in their removal and to weaken their action. In addition to their salutary influence in cleansing the primæ viæ, emetics and cathartics, well chosen and exhibited with judgment, contribute to the production of the *secreting stage*. They, in a particular manner, tend to restore to a healthy condition the skin and the secreting structures that pour their products into the alimentary canal. On this ground

these remedies do much more towards the reestablishment of health, than merely evacuating the contents of the stomach and bowels. When, to use the fashionable language of the profession, they perform the office of *alteratives*, they do it chiefly by correcting morbid secretory processes. To do this, they produce new impressions, which give rise to new sympathies, and new states of action in associated organs, and thus reunite the broken circle of health.

But, for the attainment of the stage of secretion with the greatest certainty, and under circumstances best calculated to render it useful, the most important measure is the proper regulation of arterial excitement.*

As already stated, it may be viewed in the light of a maxim in physiology, that except at a certain point of vascular action, salutary secretion cannot

*The character of the stage of excitement, being only an *effect*, depends necessarily in no small degree, on that of the stage immediately preceding it, which is its cause.

Hence a strict attention to the regulation of the stage of rigor is of great importance as a practical expedient. If likely to prove severe and protracted, and thus to endanger the safety of the system by the depth and force of venous congestion, it ought, by the use of warm diluting drinks, united at times with laudanum, and the judicious application of external warmth, friction, and other stimulating applications to the skin, to be limited as much as possible both in intensity and duration.

By this course of management, a disease threatening to prove a fever alarmingly *congestive*, may be transmuted into one *excitè* or *inflammatory*

take place. When the action is above that point, it must be reduced, and when below it, raised, until, in either case, it attains it. In that state of excitement *only* can sudorifics, expectorants, diuretics, and other articles productive of secretion, act with effect. The action of the system being at the *requisite standard*, secretion is much more likely to occur *spontaneously*,* than *by the use of medicines*, if it be at *any other*.

By these principles will the practice of the educated physician be regulated. He will elevate or

*The morbid excitement being reduced to the proper standard, the disease is brought within the controul of the *recuperative powers* of the system, which are now sufficient of themselves to complete the cure. Those powers, when not impeded, can always remove, without the aid of medicine, a *moderate* complaint, such as a mild catarrh or a slight attack of rheumatism or peripneumony; but they are not competent to the removal of a very *severe* one. They must, however, and *do*, *complete* the cure of every disease that terminates favourably.

The practitioner *never* completes a cure. The utmost he can do is to bring the complaint within the controul of the recuperative powers, and leave the rest to them. He merely *weakens morbid* action or excites a *new* one, *they institute* that which is *healthy*.

All *effective* medicines, if exhibited during health, would produce disease. Witness emetics, cathartics, narcotics and blisters. Although blood-letting does not induce actual disease, it reduces the vigor of health. How is it possible, then, for those agents, which are actually *at war* with health, to *restore* it, if exhibited during disease? I repeat, *they do not restore it*; they merely weaken or change morbid action, thus facilitating the operation of other remedies,

depress, awaken or tranquillize arterial action, according to the standard at which he finds it.

Is the fever to be treated a disease of *simple excitement* or of *real inflammation*? In either case the action is excessive, and the antiphlogistic course of practice must be adopted.

In the *former*,* no blood need probably be drawn; but, in the *latter*, it must, and the operation be repeated, or not, according to circumstances. To this is to be added, in such extent as the case may require, other corresponding and cooperative remedies.†

When, by a due perseverance in this course of practice, the excitement is reduced to the proper

and rendering the complaint controllable by the powers of nature, which themselves furnish the cure—They convert a *violent* disease into a *mild* one, which nature then cures, as if it had been mild *from the beginning*.

*In fevers of *simple excitement*, emetics, cathartics, and diluent drinks, with cold applications to the surface of the body, are sufficient to produce a solution of the disease. Antimonial preparations, both when they produce vomiting and when they do not, are powerful not only in the reduction of febrile action, but in exciting secretion. Preparations of ipecacuanha, although less effective, may be rendered, by skilful management, highly tributary to the same ends. So may mercury under several forms, more especially those of calomel and the blue pill.

†The remedies to which allusion here is particularly made, are the same that are indicated in the preceding note, viz. diluents, the application to the surface of the body of *cold*, and in some cases of *tepid*

standard, if the secretory process does not take place in the requisite degree, remedies calculated more particularly to promote it may be safely employed. These are what are usually denominated *sudorifics*; but they act on other emunctories as well as on the skin.* A detailed account either of the articles themselves or of the mode of exhibiting them, would be inconsistent with the plan of this essay. Nor is

water, antimonials, mercurials, and preparations of ipecacuanha. When, by a due perseverance in the antiphlogistic plan of treatment, inflammatory fevers have been reduced from *general* to *local* affections, blisters become useful. But if applied while the febrile symptoms prevail, they act as irritants, and do mischief.

**Medicinal* substances taken internally, with a view to promote secretion, to serve as tonics, or to produce any other remediate effect, always act *primarily* on some portion of the alimentary canal, chiefly the stomach, and on other organs or on the system generally, *through the medium of sympathy*. If they pass into the blood vessels at all, it is not in their medicinal capacity, but in a state of *assimilation*, which reduces them to the condition of *alimentary* articles. The blood can no more be *medicated* by salutary substances, than adulterated by deleterious ones.

Medicinal, like noxious agents, are limited in their *primary* action, to the alimentary canal, the skin, the schneiderian membrane, and the brain, the affections of the mind only acting *primarily* on the latter. Like *fever*, therefore, the *curative process* begins *locally*, and becomes general by means of sympathy.

Of all the organs, whether for the production or the cure of fever, the stomach is the most powerful sympathetic centre. Its different susceptibilities and

it at all necessary, as there are few practical works that do not contain it.

When the degree of action is below the secreting point, an opposite course of practice must be pursued, until it has been raised to the standard required.

sympathies, therefore, in different conditions, cannot be too thoroughly studied by the practitioner.

It is by some physicians very strangely alleged, that if a medicinal article acting on a given organ, say the stomach or the skin, produces by sympathy a salutary effect on a *distant* part labouring under disease, the same article would necessarily produce a similar effect on the same suffering part, if conveyed and applied *immediately* to it, through the medium of the blood.

An error more gross and palpable than this can scarcely be imagined, as might be satisfactorily proved by examples innumerable.

Tartar emetic acting on the *stomach*, relieves catarrh, asthma, and other affections of the *respiratory apparatus*, as well as rheumatic affections of the joints. Apply it by the blood to the parts diseased, and it will *prove deleterious*.

By acting on the alimentary canal, mercurial preparations promote the secretion of bile, and in that way remove hepatic congestion. Inject them into the liver through the *vena portæ*, and if serious inflammation do not ensue, certainly nothing salutary will be effected.

In the practice of medicine it is a general rule, that *remote* impressions give much more relief to diseased parts by *sympathy*, than impressions made *immediately* on such parts do by their *direct* and *primary* action. So true is this, that where *one* complaint is cured in the *latter* mode, *fifty* are cured in the *former*.

There are two conditions of the system, very widely different from each other, in both of which its action is below the secreting point. These are the states of *exhaustion*, or *collapse*, and *oppression*.* The former takes place at the *close* of fever, and the debility in it is *real*. The *latter*, at the *beginning*, and

*As these two diseased conditions of the system are essentially different from each other, and require very different modes of treatment, it is important that the practitioner be able to distinguish them. In making this distinction the following suggestions may be somewhat useful to him.

As already stated in the text, *oppression* occurs at the *commencement*, and *exhaustion* towards the *close*, or at least in an *advanced stage*, of fever.

In *oppression* the pulse is labouring, irregular, and marked, in some of its strokes, with considerable volume and force. In *oppression*, it is less irregular, and labors less, but is feeble and small.

In *exhaustion* the patient is generally much emaciated, and his tongue is thickly covered with a brown or dark coloured crust. In *oppression*, his emaciation is less, and the covering of his tongue of a lighter colour and not so thick—At times this covering is entirely wanting in an oppressed state of the system.

In *oppression*, there are, as the term imports, deeper anxiety and distress in breathing, and about the præcordia; in *exhaustion* there is a stronger manifestation of general debility and languor.

In *oppression*, the complexion is sometimes purplish or livid, the eyes protruded, and the countenance full. In *exhaustion* the face is pale, the eyes hollow, and the cheeks sunken. In this latter state of the system, the teeth are often covered with a dark sordes.

The debility accompanying it is only *apparent*. The strength is overpowered, not extinguished. The heart still struggles, but struggles *in chains*; while in collapse it has partially submitted and ceased to resist.

For the removal of these two affections, the means to be employed are as different from each other, as are the conditions of the body in which they are exhibited. Yet in both the object is the same—to raise the action to the level of secretion.

When *exhaustion* prevails, the practice consists in *stimulation* alone. In *oppression*, it consists in *stimulation* and *depletion* judiciously united.

In the former case, the system resembles a vessel in a stormy ocean, likely to be overwhelmed by the waves for want of sails to urge her through the water. In the latter, it resembles the same vessel about to sink from the weight of her burthen.

To save the ship in the first instance, spread more canvass. In the last, lighten her, by throwing overboard a portion of her cargo.

Is the system, in an *advanced stage* of fever, prostrated, by exhaustion, far below the secreting point? Stimulate, both externally and internally, until the requisite degree of excitement is attained.

The means to be used in this process, being familiar to every one, need not be specified. The most active of them are, wine, ardent spirits, laudanum, sinapisms, rubefacients^ggenerally, and blisters.*

*In cases of this description volatile alkali, musk, camphor, and ether, are much employed. But in the practice of the author they have never deserved the reputation they possess.

Is the system, in the *commencement* of fever, sunk by *oppression* greatly below the standard of secretion? Is the pulse labouring, the blood almost stagnant, the skin entirely cool or its temperature in different parts unequal and irregular, and the strength overwhelmed as by an insupportable load, with oppressed respiration, deep sighing, and great anxiety about the præcordia?

As remedies here, while stimulants are employed,* especially external ones, as if the case were marked by exhaustion, let evacuations be produced—but with great caution, that their effects may be

*The external stimulants most to be relied on are, the warm bath rendered more active by salt, pepper, mustard, or ardent spirits thrown into it, the nitromuriatic acid bath, a free and pure atmosphere of a suitable temperature, frictions, and sinapisms with horse-radish or garlic; the latter to be applied to the abdomen and extremities.

Blistering, although recommended by high authority, does not, in cases of deep congestion, awaken action either so suddenly, certainly, or safely, as other stimulants, which serve only as rubefacients, but may be applied more extensively to the surface of the body.

To act as further aids in producing excitement, warm diluting drinks should be always exhibited, and, in cases of great obstinacy and peril, these may be advantageously rendered more stimulating by the addition of wine, brandy or laudanum.

Venesection, while the patient is in the warm bath, and under the influence of friction and rubefacients, proves often successful in exciting reaction. So do warm stimulating injections.

observed—both from the blood vessels and the primæ viæ.

If the pulse rise and expand, let the blood continue to flow, until the oppression is relieved, and the excitement and strength are sufficiently developed. But if it sink further and labour more, the vein should be closed, lest the patient expire in the midst of the operation.

In this practice, where *evacuation* and *stimulation* are thus united, there is no inconsistency or want of reason.

The blood is partially *stagnating*, because it is too *voluminous* and *weighty* for the heart, oppressed and overwhelmed, to put in motion.* In consequence of this, it has lost, in part, its *arterial character*, and with that its *fitness as a stimulus to the heart*. Throw it again into active circulation, by diminishing its quantity and weight, and exciting the heart by artificial stimuli, and by thus passing it through the lungs, its arterial character,† and its aptitude as a stimulus are both restored. The *heart* and *blood*

*Added to the diminution which it effects in the volume and weight of the blood, venesection aids not a little in producing a resolution of the spasm of the blood vessels, especially the capillaries, which conflicts directly with the action of the heart, and impedes circulation in the extremities and in the superficial portions of the body. To resolve spasm, as well of the blood vessels as of the muscles, constitutes one of the most prominent effects of venesection.

†On opening a vein in a case of fever highly congestive, the blood, now nearly *stagnant*, is, when it

once more perform towards each other their healthy offices. The *latter*, stimulating the *former* to the requisite degree of action, receives from it in return a sufficiency of motion to throw it through the lungs, and thus preserve its arterial and natural character.

In this mixed process of evacuating and stimulating, the heart loses nothing of its real power to move, while the blood loses much of its weight to be moved, and, their spasm being weakened, the capillaries offer less resistance. Hence, in relation to the effect it has to produce, the *vis movens*, or moving power, virtually increases in strength and efficiency, in proportion to the diminution of weight in the fluid it has to put in motion, and of the other resistance it has to overcome. While reason and sound pathology seem to recognize the correctness of this view of things, actual experience gives it its sanction.

When, by these modes of practice, the action of the system is raised, no matter whether from oppression or exhaustion, to the point of secretion, that process, if it does not occur spontaneously, is to be promoted by the remediate agents already indicated. Whether the excitement has been increased or di-

begins to flow, of a *deep modena* colour; but, as its circulation becomes *more active*, it acquires the fine *arterial scarlet*. This *dark* blood, kept by itself, scarcely coagulates; while the scarlet coagulates speedily and firmly. Blood drawn from the same patient a few hours afterwards, exhibits frequently, on coagulating, a thick covering of inflammatory size. By admitting the doctrine of the *vitality of the blood*, these phenomena may be easily explained. Reject it, and they are inexplicable.

minated, the standard to which it has been brought is the same, and the same course must now be pursued to produce centrifugal and secretory action, and bring the complaint to a favourable termination.

Sometimes the system, thus awakened and roused to excitement from a state of deep preceding congestion and torpor, takes on a degree of action so *high and inflammatory*, that further evacuations from the vascular system become requisite to reduce it. The practitioner first bleeds, as a means to *create* reaction, and afterwards to *subdue* it.

The fever being removed, the patient is found to be reduced to a state of great debility. Hence, for the restoration of his strength, tonic remedies are usually prescribed; and, in the estimation of most physicians, such articles are essential to his recovery.

That this opinion is not correct, and that the practice founded on it has done much mischief in convalescence from fever, reason and experience unite to testify.

Unless *internal congestion* be entirely resolved, tonic remedies are *always injurious*; and if it be resolved, they are *almost always unnecessary*. They may do much mischief, and *can*, in general, do but little good.

If morbid action be completely eradicated, the patient, no longer diseased, has nothing to contend with but *weakness*; and that, in general, can be most certainly and speedily removed by diet and regimen.

To all general rules exceptions do and must exist. But it may be confidently pronounced *the general rule*, that convalescence from fever can be much bet-

ter conducted *without tonics* than with them. Being, for the most part, disagreeable to patients, they are taken with reluctance. They sometimes impair the appetite, but more frequently increase it. In the former case, they prevent convalescents from taking the requisite amount of food, and, in the latter, induce them to take more than their systems require, or their digestive organs can assimilate. It is but seldom that they increase the real digestive energies of the chylopoietic viscera.

When their complaints are perfectly eradicated, convalescents have, for the most part, an appetite preternaturally keen, which ought not to be indulged to the extent of its craving. Under these circumstances, the administration of tonics would be highly injudicious.

If, on the contrary, their appetite is defective, the presumption is strong, that some internal congestion still remains, which would be rendered worse by the action of tonics, and perhaps re-converted into serious disease. In such a case the most safe and efficient practice is, to sustain the system by the amount of suitable nourishment which the appetite calls for, until the congestion is entirely resolved, either by nature herself, or with the aid of remedies, when the desire for food will increase, digestion and nutrition be duly performed, and substance and vigour restored to the body.

To attempt, in convalescence, to create an appetite by means of *tonics*, is like attempting in fever, during high excitement, to force a sweat by *heating* remedies. In either case, the powers of nature will

be roused to excessive action, congestions or wrong determinations *already existing* will be strengthened and rendered more obstinate, *new ones*, perhaps, formed, the system further debilitated, and the disease extended in duration and increased in danger, and, probably, urged to a fatal termination. In either case, mischief will be prevented by withholding medicine, and health restored by a little delay.

The practice of the skilful and successful physician is characterized by *vigour* and *intrepidity* in the commencement of fever, and by *caution* towards its close. The same judgment and experience that direct the one, will not fail to recommend the other.

To withhold medicines, *contrary* to custom, when the exhibition of them would prove injurious, requires much more sagacity and decision, than to administer them, *according* to custom, when the practice is correct. The professional tyro can do the *latter*, while none but the enlightened and independent practitioner will risk the *former*.

The author wishes it to be distinctly understood, that no sentiment here expressed is to be construed into an entire proscription of tonics. In convalescence from certain chronic diseases, their employment is, perhaps, essential. But, in convalescence from fever, to which disease alone this essay relates, where the only desideratum is the recovery of strength, it is confidently believed that their exhibition has done much more harm than good.

The judicious exhibition of bark, and other stimulants, in the treatment of intermitting fever, does not fall within the compass of this discussion. Yet even

those remedies, when injudiciously administered, have done incalculable mischief.*

That solution of fever which is usually called the *sweating*, has been denominated, in this essay, the *secreting stage*. For this departure from the customary nomenclature, it is believed that a satisfactory reason can be rendered.

The skin is but *one* of the many emunctories that are thrown into action on the decline of fever. *Sweat* is, therefore, but one of the many secretions that now begin to flow. Cotemporaneously with the appearance of that discharge, the bile also is produced in larger quantities, urine is secreted in greater abundance and of a different quality, expectoration becomes more free, the tongue moister, and the saliva-

*Administer bark in intermitting fever during any one of the elements of the paroxysm, and, to say the least, you in general do no good. The reverse is usually true.

Suffer the state of apyrexia to take place, and, provided it be complete, you have then, instead of fever, nothing, perhaps, to encounter but topical debility predisposing to a recurrence of internal topical congestion.

This debility may be removed and the threatened congestion prevented, by bark, opium, arsenic, spider's web, wine, the passions of the mind, suitable warmth, and various other active stimulants, external as well as internal, provided they be exhibited with judgment and skill.

Prevent the recurrence of internal torpor and congestion, by maintaining a vigorous circulation, and exciting a state of centrifugal action, and you effectually prevent the recurrence of the paroxysm.

ry and even the lachrymal glands secrete more copiously. In fact, provided the solution of fever be complete, every secreting structure of the body resumes its healthy function, which, during the disease, had been in some way deranged—altered in character or diminished in extent.

What is here called the secreting stage of fever is tantamount to that which has long been denominated the “*critical discharge*.”*

*Although *every secretory evacuation* is salutary in *every febrile disease*, yet particular evacuations of this description are more salutary in some forms of fever than in others.

In fevers arising from deep abdominal congestion, hepatic and pancreatic secretions, and those effected by the mucous lining of the alimentary canal, are most favourable; fevers depending on thoracic congestion are most immediately relieved by mucous secretions from the schneiderian membrane; while those radicated in the cerebral membranes are usually brought to a favourable issue by secretions from the kidneys and the liver, the schneiderian membrane, and sometimes from the salivary glands. Cutaneous secretion, to a certain extent, is essential to the cure of every fever.

It should never be forgotten that in the treatment of bilious fever, in all its varieties, much more depends on rectifying and regulating the abdominal secretions generally, than on *merely* producing evacuations from the stomach and bowels. Let the secreted fluids be poured into the alimentary canal in sufficient quantity and of proper qualities, and they will rarely fail to evacuate themselves.

Tartar emetic and calomel are oftentimes highly salutary in their action when they neither puke nor purge.

While the reality and the necessity of this discharge have been questioned by some, its existence has been positively denied by others. It has been confidently asserted, that many febrile complaints have come to a favourable termination without it. But the doubt, the denial, and the assertion, appear to the author to be without any solid foundation in truth.

That every febrile complaint which does not prove fatal must terminate by a critical evacuation of some sort, and that it cannot terminate favourably without it, is as much a law of nature as it is that it must begin with a *spasm and a chill*, and be marked in its course by a stage of excitement. No matter how inconsiderable in quantity, or of what description the evacuation may be, perspirable matter, bile, pancreatic liquor, urine, serum, or mucus, provided it be a secreted fluid, it is sufficient.* The emunctories of the body being in unison with each other, the occurrence of the discharge from any one of them is indicative of a return of general centrifugal action, of a natural condition of the system of capillaries, and of the reestablishment of harmony between them and the heart.

The solution of the fever does not depend on the mere evacuation of the secreted fluid. That evacuation is only an *effect*, but a *necessary* effect, of the re-

*The seeming exception to this rule presented by the *sudor anglicanus*, and a few other complaints, in which *morbid* secretions afford no relief, is *but* an exception, and does not in any degree *invalidate* the rule.

storation of that equilibrium of action and circulation in which health consists, and the derangement of which had constituted the disease.

Writers inform us that the critical evacuation may be, and at times is, a real hemorrhagic effusion. This appears to be a mistake. The hemorrhagy does not *constitute* the critical discharge, but *prepares the way for it*, by bringing the system to the *secreting point*. Let observation on the subject be kept sufficiently awake, and the hemorrhagic evacuation will be found to be succeeded by the appearance of some secreted fluid, small, perhaps, in quantity, but different in its character from what it was during the disease. Nor does convalescence fairly commence until after its occurrence.

To this the menstrual evacuation, which forms, at times, the critical discharge, constitutes no exception. That, when healthy, is a secreted fluid; and when the evacuation from the uterus is not healthy, but truly hemorrhagic, it does not form the critical discharge, but, like any other hemorrhagy, prepares the system for it by bringing it to the proper point of action. The secreted discharge, which alone is critical, follows as a thing of course.

On the subject of *critical days*, the author does not feel prepared to offer an opinion. However inclined he may himself be to a belief in their existence, he is not, perhaps, provided with a sufficiency of evidence to prove it to others who may hold it in doubt. He will only add, that many facts and all analogy appear to him to favour the doctrine. Nor is he acquainted with a single argument of pertinency and

weight, which he considers opposed to it. That many anomalies and seeming exceptions to the general rule exist, cannot be denied. But to regard them *as* exceptions and nothing more, comports best with general analogy, and does not appear to be at war with fact.

To exhibit a more condensed and single view of the principles contained in this essay, the following summary of it is given.

Fever is a compound disease, made up of morbid affections of all the various *sub-systems* or tissues belonging to the body. It is, therefore, if not in the literal acceptation of the expression, at least in a much higher degree than any other complaint, a disease of the *whole system*.

It originates *always and necessarily in a primary local affection** of some *solid* part of the body, which, through the medium of *sympathy*, excites ultimately

*The practical benefit resulting from the doctrine of the original locality of fever is obvious.

Learn, at an early period of the disease, the organ on which the *deleterious impression* is made, and by acting on it promptly and forcibly by a suitable remediate agent, the *impression* may be extinguished, and the general affection entirely prevented, or greatly curtailed in its duration and reduced in its violence.

The local impression productive of bilious fever is made on the mucous lining of the stomach. Hence an emetic administered at the commencement of the complaint, is often instrumental in its immediate suppression.

In peripneumony and catarrhal fever, the deleterious impression productive of the disease is made on

into morbid action all the other parts. It is, therefore, essentially, a *disease of sympathy*.

The primary local affection does not necessarily imply *inflammation*, but may be merely *irritative*, i. e. marked only by excitement below inflammation but above what is natural, *sensative* and *inflammatory*, or so deeply *congestive* as to be beyond the point of inflammatory reaction.

This affection is not *necessarily* seated in the stomach,* although it is *usually* there; and the *resistance* of that organ must be *always* overcome, before fever can be formed. The *immediate* seat of the ori-

the skin by humidity or cold. Hence the warm bath and friction, at the proper period and to the requisite extent, oftentimes prevent the febrile affection.

The same thing is true in relation to most febrile diseases, provided the immediate seat of the impression productive of them be certainly known. Act on the part, directly or indirectly, with judgment and force, at a period sufficiently early, and you do much to prevent or weaken the complaint.

*The author means that a febrile disease may result from a primary local affection *not seated* in any part of the alimentary canal. The affection may be situated in the membranes of the joints, as in rheumatism, in those of the thorax, in pleuritis vera, in those of the brain, in phrenitis, or in the skin, as in a febrile complaint produced by a burn.

But those diseases more technically denominated fever, *are* seated in the alimentary canal. These are common bilious fever in its various forms, intermitting, remitting, and continued, yellow fever, pestis vera, and typhus fever.

Most of the exanthemata have also a gastric origin, especially scarlatina, erysipelas, and casual

ginal affection is generally a *membranous structure*, and on the nature of the structure, and the particular organ to which it belongs, does the character of the disease materially depend. A fever radicated in a *serous*, differs, in many respects, from one seated in a *mucous* membrane, while the disease produced by an affection of the fibrous or muscular structure, is different from both.

A fever, again, arising from an inflammatory affection of the *dura matter* or the *tunica arachnoides*, presents many points of difference from one produced by a similar affection of the *pleura* or diaphragm, and a fever originating in an inflammation of the *peritoneum* is as dissimilar to either of them, as they are to each other. Yet all these are *serous* and fibrous membranes. So fertile and powerful, in varying febrile complaints, is the modifying influence of diversity of organic structure, diversity of local impression, and diversity of sympathy.

The mucous tissue of the alimentary canal constitutes the seat of the most formidable fevers. Connected, however, with the affection of that tissue is an extensive congestion of the abdominal blood vessels. Fevers radicated in *this* mucous structure are

small pox. Although measles throws itself secondarily on the schneiderian membrane, and then on the skin, it is also gastric in its *origin*, and usually *terminates* with more or less of a gastric or intestinal affection.

There is reason to believe that *every eruptive* febrile affection is radicated in some portion of the digestive apparatus.

those in which the nervous and cerebral systems are most deeply affected. When situated in the mucous membrane of the *trachea* and *lungs*, or in serous membranes, they are of a character more purely vascular or inflammatory. The recollection of every physician will supply him with examples confirmatory of this.

To the existence of fever, *internal congestion* and *centripetal* action are essential. These imply a state of warfare between the arteries, more especially the capillaries, and the heart. In this condition of things all the emunctories of the body cease to perform their natural functions, and participate of disease.

The internal congestion, itself the result of centripetal action, is the cause of the febrile *excitement* which follows. That excitement is the cause of the *secreting stage*, which, produced by the return of centrifugal action and the natural harmony between the heart and blood vessels, resolves the paroxysm.

All febrile diseases consist of one or more paroxysms, which, whether long or short, simple or compound, originate in the same way, pass through the same *stages*, and terminate in *that of secretion*.

If, by this stage, the internal congestion be entirely removed, the resolution of the paroxysm is complete, and a state of perfect intermission or apyrexia ensues. But if it be removed *only in part*, the paroxysm is but partially resolved, and nothing follows but a state of remission.

Fever, then, in its several stages, is an effort of nature to eradicate a morbid local affection, which being eradicated, the fever ceases. But this event

never takes place until the occurrence of the secreting stage.

Instead of an *original*, fever is *always* and *necessarily* a *symptomatic* disease, the phenomena which constitute it being the result of a primary læsion, irritative or sensative, functional or organic. An *idiopathic* fever has no existence.

If the primary affection be slight, the symptoms which follow moderate, and the constitution of the patient sound and vigorous, nature herself, if not interrupted, will complete the cure, with but little or no assistance from art. This she will do by a restoration of the broken balance of action and circulation. In this case, it is the chief duty of the physician to be a mere looker-on, attentively observant of the process before him, and careful that nothing in the course of it go wrong.

But if the complaint be severe, and the issue doubtful, the practitioner must interfere, with the resources of his art.

In doing this, he must still be a faithful follower of nature. Like her, he must aim at the production of centrifugal action, that a general equilibrium may be restored, and the paroxysm resolved in a secreting stage. To aid with all his skill in the production of that stage must be his object; and to that issue must all his exertions be directed.

In his efforts to effect this, his course is plain. Nature herself has drawn the outline of it, and set him the example how to follow.

He must not permit the action of the system to be either too high or too low, but must so regulate it as

to bring it directly to the secreting point. This being done, his next duty is to administer secretory remedies, if the process does not spontaneously occur.

The means to be employed by him, in regulating the action of the system, are plain and simple. He must, according to circumstances, evacuate, cool, and reduce, or stimulate, raise, and give warmth, or employ, at the same time, both modes of practice skilfully united. Let him use every expedient that experience and invention can suggest, judgment approve, and art apply, to resolve spasm, produce general centrifugal action, and induce secretion, and his duty is performed. If, under these circumstances, the disease proves fatal, it is on account of its being, from some consideration, beyond the control of the present state of medical science.

The fever being subdued by the entire removal of irritation and internal congestion, convalescence will, in general, be most successfully conducted without the exhibition of tonic remedies. A scheme of diet, drink and general regimen, skilfully directed, and faithfully observed, constitutes now the means in which confidence may be most safely reposed. The patient is feeble and emaciated, but not *diseased*. Let the points specified, then, receive the attention to which they are entitled, and the powers of the constitution will accomplish the rest, by bestowing contemporaneously substance and strength.

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THE END.





