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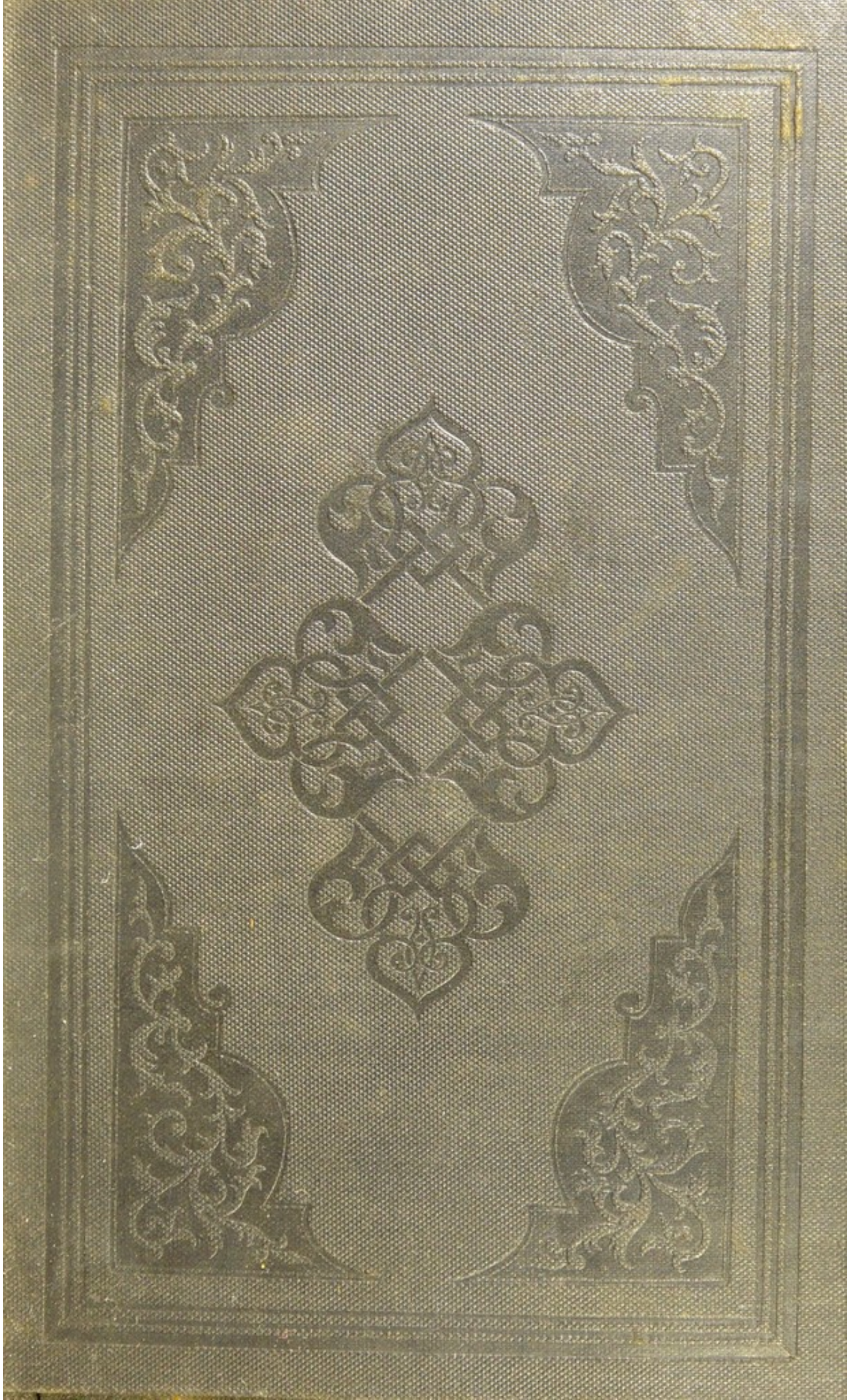

MEDICAL WORKS

BY

G. CALVERT HOLLAND, M.D.

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G. CALVERT HOLLAND, M.D.

LATELY PHYSICIAN TO THE SHEFFIELD GENERAL INFIRMARY, BACHELIER ES-LETTRES OF THE UNIVERSITY OF PARIS, FORMERLY PRESIDENT OF THE ROYAL PHYSICAL AND HUNTERIAN SOCIETIES, EDINBURGH.

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1849.

THE

NATURE AND CURE

OF

CONSUMPTION, INDIGESTION,

SCROFULA,

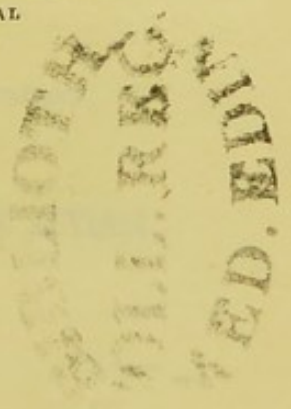
AND

NERVOUS AFFECTIONS.

BY

G. CALVERT HOLLAND, M.D.,

LATELY PHYSICIAN TO THE SHEFFIELD GENERAL INFIRMARY, BACHELIER ES-LETTRES OF THE UNIVERSITY OF PARIS, FORMERLY PRESIDENT OF THE ROYAL PHYSICAL AND HUNTERIAN SOCIETIES, EDINBURGH.



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PREFACE.

Few remarks will be necessary in introducing the present work to the public.

The Author has for many years devoted his attention almost exclusively to the investigation of the functions of the nervous system, and some of the results of his researches have been given to the world in two separate treatises.* He has endeavoured to prove, in opposition to the doctrines of physiologists, that all the phenomena of life, occurring either in health or disease, originate in the widely pervading influence of nervous matter; or in other words, that every vital manifestation, whether in connexion with digestion, circulation, absorption, nutrition or secretion, is to be traced to the unceasing agency of the nerves. They enable every organ to exercise the office for which it is peculiarly fitted by its structure:—they alone impart to all tissues the principle in virtue of which these perform their part in the mysterious scheme of the animal economy.

When it is considered that every vital process, whatever may be its character, necessarily depends on the co-operation of two systems,—the nervous and sanguineous; and when it is further taken into account that the function of the latter system is to carry the materials of nutrition to all organs, pos-

* The Philosophy of Animated Nature, or the Laws and Action of the Nervous System, 1848.—Practical Views on Nervous Diseases, 1850.

sessing in themselves no power to regulate the appropriation of them, it indisputably follows that such power can reside only in nervous matter.

This, however, is not the occasion to show the justness of these opinions. The facts and arguments by which they are supported will be found interspersed throughout the pages of the present volume; but in much greater detail, and accompanied with far more copious illustrations in the two works mentioned; to which, for a fuller exposition of the Author's views, the reader is referred.

He is sensible that they will receive no ready acceptance from the profession generally; nor indeed from those whose position, talents and pursuits constitute them authorities on such matters. New truths, however just their claim to attention, have always to pass through the ordeal of persecution, and fortunate indeed is the promulgator of them, if the harsh and severe spirit which he evokes, finds not greater pleasure in personal abuse or coarse invective, than in detecting errors, or in exposing weak or untenable points. But he whose inquiries are prompted by the sincere love of truth, who neither turns to the right nor to the left from interested considerations, may well afford to abide his time.

He knows little of human nature,—of its prevailing prejudices and illiberality, who flatters himself that his contributions to science,—to the cause of humanity at large, will meet with a willing acknowledgment from the world, or more especially from that section of society with which he is professionally connected. From the latter he must expect his

reward, but it will not be in the grateful form of warm congratulations stimulating to future exertions. He must not indulge in the pleasing anticipation of feelings of this kind.

The medical profession is peculiarly distinguished by its want of generous conduct, or encouraging expressions towards those who sedulously labour to extend the boundaries of the healing art. At one moment, it receives and adopts with marvellous facility what is new, if the application of it to disease requires little thought: at another, if the thorough understanding of it demands the vigorous exercise of the intellect, it is treated with contempt or ridicule, and studied efforts are generally made to lower the just respectability of those whose best years and energies have been devoted to the cultivation of science.

It is difficult to account for the bitter and hostile feelings which discoveries in medical science excite. The more important they are, the more unmeasured is the persecution. The first step is usually to show that they are altogether unworthy of notice, and when this fails in its object, it is then attempted to be shown that if the discoveries be unquestionable, they are not new; and this mode of warfare is carried on with various degrees of success, until, at length, the approving voice of enlightened public opinion gives them a passport to succeeding generations.

Were the hostility which is awakened directed against the truths for which originality is claimed, if exhibited in a bland and impartial spirit, it would be legitimate and salutary in its influence

The misfortune, however, is, that the man, and not his views, is the target at which the arrows are shot; and he is as much hunted down as if he had committed a crime for which he was amenable to the laws of his country.

Is there one in the profession that will deny the force of these remarks? Such conduct arises chiefly from the difficulty which is experienced by the many in obtaining a commanding sphere for the exercise of their art;—and the struggle among the few for pre-eminence and distinction.

The latter cannot bear any new light in their immediate vicinity: if it be transmitted from a distance, the intervening space gives it an exaggerated value, and it is welcomed with feelings of admiration, as free from personal considerations as if it were the contribution of remote times fortuitously brought to-day.

This small, but influential class of reckless opponents to discoveries and innovations, or to meritorious efforts enlarging our acquaintance with the functions of life, are aroused to the manifestation of this spirit to prevent the growth of a reputation, the acknowledgment of which, to their contracted understandings, appears likely to endanger the security of their own elevated position in the world of letters. It is found much easier to depress talent and enterprise in others,—or to narrow the public stage for their display and recognition, than to enter into honourable competition for the unsubstantial rewards of scientific distinction.

A modern philosopher has in part touched on this class of men in the following admirable remarks,

which for their justness and elegance of expression are worthy of being recorded. "A man in the present day with regard to the sciences is something like Virgil's boatman, *si brachia fortè remisit*, he loses his place—he is in effect carried backward. There is a perpetual necessity for exertion if he would maintain his relative position in the world of intellect; and from this necessity arises much of that hostility to improvement which characterizes the dull and the indolent. Thus what should yield delight proves a source of mortification; for what in reality can be more exhilarating than the thought, that thousands of minds are constantly at work upon new improvements and discoveries, that every year may bring some correction to our errors and solve some of our difficulties, and that as long as we live, new lights will pour upon our understandings? A right view of the subject would show us that every man of genius, of enterprise, and of research, is labouring for our gratification, smoothing the path for our steps, and illuminating objects to delight our vision."*

Of all pursuits in life, the medical profession should stand out in bold relief, in contrast with the petty, the narrow and mean feelings which too frequently mark the actions of mankind. Its members have to deal with the bodily sufferings of humanity, as various in their forms, as they are mysterious in their origin; to relieve which, is a source of anxiety and embarrassment to all who are capable of reflection; and, therefore, on them especially should prejudice hang

* Essays on the Pursuit of Truth, and on the Progress of Knowledge. By Samuel Bailey, Esq.

loosely. They cannot with pride assert that they walk in a pathway of light, or that their bold and unhesitating steps are guided by established principles. Like the plant immured in the dark cell, they should instinctively turn in the direction of the chink that admits the faintest glimmering.

But in their conduct, in relation to inquiries which propose to give a deeper insight into the laws of the animal economy, and proportionately to extend and refine the resources of the healing art, they not inaptly suggest the words of Molière, in the Malade Imaginaire,—the force of which time has in no degree diminished:—"Mais, sur toute chose, ce qui me plaît en lui, et en quoi il suit mon example, c'est qu'il s'attache eveuglément aux opinions de nos anciens, et que jamais il n'a voulu comprendre, ni écouter les raisons et les expériences des prétendues découvertes de notre siecle, touchant la circulation du sang, et autres opinions de même farine."

If the views contained in the following pages be founded in truth, they have an application far greater than is here indicated. They will tend to elucidate the nature of all diseases, or at least by presenting them under novel aspects, will put the mind upon fresh tracks of investigation,—will sharpen the powers of observation, and enhance the value of numerous facts which have hitherto possessed little interest. They will likewise exercise a corresponding influence on the employment of remedial measures. On these points, however, it is not necessary to enlarge.

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CHAPTER I.

THE PROPERTIES AND INFLUENCE OF THE NERVOUS SYSTEM.

1. Had not our own researches into the powers of life, and the sources of disease generally, led to the inevitable conclusion that erroneous and unphilosophical opinions prevail concerning the origin and nature of an extensive class of morbid affections, the inference would necessarily have been forced upon the mind by the widely discrepant views pervading the entire of the medical profession. The remedies employed indicate, in their application, the absence of maturely elaborated principles. The same disease, in the hands of one, is stated to be cured with marvellous facility by the stimulating and invigorating method: by another, it is contended that it can be safely and promptly arrested only by the copious abstraction of blood: by a third, these measures are unsparingly condemned as fraught with serious injury to the animal economy, and others are proposed with no less confidence as free from all possible objections: a fourth, equally discountenances the pathological ideas and practice of the rest, and while he labours to expose the glaring fallacies of his contemporaries, introduces

for our acceptance a plan opposed in its aim and nature to the suggestions and recommendations of others: a fifth, ridicules with the happiest sallies of wit these jarring discords in the sentiments of his medical brethren, and shows with equal ease and success, what he conceives to be the only true foundation of the remedial art. Shall we multiply the differences still further?

In the preceding list we have a class of thinkers,—men who speculate on data derived either from their own experience or independent inquiries, and their views always demand respectful consideration. They assign a reason for their faith. The far greater part, however, of those engaged in the active duties of the profession, have no fixed notions on the nature of disease or its treatment. They follow a routine that might be stereotyped from its unswerving accuracy of outline for the edification of posterity; or they vacillate with thoughtless freedom from one method or remedy to another, the passive recipients of ideas, without catching the discriminating spirit essential to their judicious application.*

* "At this moment," says Mr. Pinny, "the opinions on the subject of treatment are almost as numerous as the practitioners themselves. Witness the mass of contradiction on the treatment of even one disease, viz., consumption. Stoll attributes its frequency to the introduction of Bark. Morton considers Bark an effectual cure. Reid ascribes the frequency of the disease to the use of Mercury. Brillonet asserts that it is curable by Mercury only. Ruse says that consumption is an inflammatory disease, should be treated by bleeding, purging, cooling medicines, and starvation. Salvadori says it is a disease of debility, and should be treated by tonics, stimulating remedies, and a generous diet. Galen recommended Vinegar as the best

II. The foregoing sketch has features which all will recognize. To bring it home to the understanding of the intelligent reader, in all its suggestive truthfulness and copiousness of illustration, it is not necessary to heighten the picture by any additional touches.

We have adverted to these extraordinary discrepancies,—this clashing of opinion on subjects of vital importance to humanity, not simply for the purpose of exhibiting differences, which necessarily imply error; but as evidence that a vast field is open to the speculations and researches of others,—a field as illimitable as any within the wide domains of science.

III. The contemplation of the existing state of the healing art will furnish not only a reason for entering upon further investigations, but shield the undertaking from the charge of presumption. The fear of incurring censure deters the timid from a bold and independent line of conduct, and moulds too frequently the spirit of enterprize to the prevailing order of things. The love of truth should ever be accompanied with the daring to express what it prompts; and in the exercise of the duty we should think less of the prejudices opposed to its reception, than of the necessity to enforce its claims to attention.

Let it not be supposed from these remarks, that we wish, in any degree, to shelter our inquiries from

preventive of consumption. Dessault and others assert that consumption is often brought on by taking Vinegar to prevent obesity. Beddoes recommended Foxglove as a specific. Dr. Parr found Foxglove more injurious in his practice than beneficial. Such are the contradictory statements of medical men."—*Critic.*

criticism, or the severe ordeal of public opinion. We court it as a test which must ultimately determine their worth.

IV. If the methods hitherto pursued in the investigation of disease had been in the right direction,—had been upon the track which leads to the establishment of enlarged philosophical views, it would be a libel on the understanding to regard the progress attained as all that was possible. Century has succeeded century, the systems and labours of one age have given place to those of others, and yet in our own times, no two writers, *who think for themselves*, at all agree concerning the nature of disease, its origin, or treatment. We are inundated with all sorts of speculations, suggestions or dogmatical rules of practice. Nor is this extraordinary. On the contrary it is perfectly natural. It is only within a few years that physiology, which professes to teach the action of the vital powers,—to point out their relations, and the mode of their co-operation in the production of vital phenomena, has been introduced as a branch of study into medical schools, and in few does it occupy a prominent or commanding position. What are we to think of medical theories or doctrines previous to an elaborate cultivation of the science of life? Is it not an absurdity to presume to dignify these with the name of principles, when a knowledge of the powers on which alone they can be securely based, is not possessed? Even on one subject, viz., the circulation of the blood, as an illustration of the force of these strictures, little has been added of prac-

tical importance since its discovery by Harvey; NOR HAS IT BEEN INVESTIGATED WITH THE CONVICTION, THAT THE INQUIRY IS FRAUGHT WITH INTENSELY VITAL RESULTS BEARING ON THE PHENOMENA OF DISEASE AND REMEDIAL MEASURES. What is the value of the indications of the pulse without an accurate knowledge of the causes by which it is modified? The mere strength, frequency or any other state of it, independently of an accurate insight into the operations of the powers of life, the manner in which they are associated in the production of their various effects, is a questionable guide in determining the line of conduct necessary to be pursued. It is one of numerous elements teeming with interest and instruction, and the significance and application of it will depend on the justness and largeness of the views entertained concerning the vital functions generally. If the science, the object of which is to unfold these in all their diversified relations, has as yet been scarcely brought under the prominent consideration of the student, and in no school regarded as the only true foundation of the healing art, what must be the character of the prevailing ideas in reference to these functions in health and disease?

Clearness and comprehensiveness of thought on all subjects is necessarily in the ratio of knowledge, and though that which flows directly from experience cannot be too highly appreciated, nevertheless, its resources are only half developed,—its power only half understood, if unenlightened by a familiar acquaintance with physiological principles. It is these

which enable us to appreciate justly the value of all morbid symptoms, as well as to suggest the appropriate remedies to correct them.

v. The nervous system, though it has been studied of late years with zeal and with considerable talent, has as yet been grasped by no mind in its wide and vital relations to the animal economy. It has been cultivated in detached or fractional portions, rather than as a grand whole embracing and controlling the entire of the powers of life. The researches into its properties, and the facts which have been established, are by no means undeserving of attention; but the light with which they abound has not hitherto been elicited in a degree commensurate with the practical importance of the investigations.

vi. In the construction of every piece of complicated mechanism, though each part has its use in association with the whole, some parts have, nevertheless, a subordinate value; they are brought into action by others which are the moving and regulating powers. When such machine becomes incapable of performing its functions, a knowledge of the relative importance of each spring and wheel in the general scheme, is essential to the correction of the existing derangement. So it is precisely with the animal system. Before startling hypotheses or ingeniously contrived theories are advanced to explain the origin and nature of disease, or the treatment essential to its relief and cure; it is equally imperative that the mind should have just and enlarged notions on the constitution of the body, not simply of the different organs of which it is formed, but of the mode in

which they co-operate in the production of vital phenomena;—or in other words, should be able to trace *the exact order in which they are to be analyzed as causes or effects.*

To know that the nervous system is endowed with the properties of sensibility and motion; that the blood undergoes changes in the lungs, is propelled by the heart, or that the stomach digests food which is absorbed by the intestines in its elaborated state, is not the degree of information adequate to meet the necessities of disordered vital action. Even a familiar acquaintance with the several functions, and the symptoms which unerringly indicate their initial deviations from health, will not confer the requisite amount of knowledge. A much deeper insight into the operations of the animal economy is demanded: far more comprehensive views in reference to the relations of these organs to each other,—the manner in which they are linked in the extended chain of causation.

The inquirer whose researches give him this commanding survey, sees in the disturbed and struggling energies of life, not a mass of chaotic elements, unconnected or void of significance, but a field of vital action of vast interest, and abounding in intelligible indications. With the ease, and almost with the accuracy of the analyst of inorganic matter, he mentally separates the efficient from the subordinate causes,—estimates at their just value the diversified effects, and distinctly points out the channels through which they are to be reached. His power is shrouded in no mystery. The resources which he brings

to bear result from his comprehensive investigations.

VII. We will briefly endeavour to explain the mode in which such knowledge is to be acquired. In the animal economy there are two systems, the nervous and the circulatory, which solicit particular attention. They furnish the means of action to the entire body, and it is through them that all organs are enabled to perform their respective functions. These organs have within themselves the mechanism essential to the exercise of their offices, but whatever be their nature, they depend on these systems for the ability to play their part in the exquisitely adjusted plan of organization. All secretions are unquestionably derived from the blood, and we are prepared to prove that the power of secreting them belongs exclusively to the nervous energy imparted to their material instruments; and that the same power animates every living fibre and stimulates it to action. On the successful investigation of this subject, will rest the force and truthfulness of the principles proposed to elucidate the nature and treatment of disease. The blood has a definite and an accurately ascertained function to perform. It contains the elements of nutrition,—a supply proportionate to the gradual waste of the body; and it is conveyed to different organs, whether of motion, sensibility or secretion, according to their necessities. It has within itself those properties essential to the continuance of life; but the distribution of the stream, and its application to the varying wants of the body, *are regulated entirely by the nervous system.* Every modification of sensibility and motion,

by which is implied every variety of muscular contraction, is to be referred to nervous agency. To withdraw this, is to arrest all vital action. This is increased and diminished with every change in the condition of the nerves. If the mind be excited, the blood flows with invigorated force, and acquires additional stimulating qualities: if depressed, the same current flags, hesitates and moves tremulously along its channels, lessened in quantity and deteriorated in its properties. With these two states of the vital fluid, every organic fibre sympathizes. Nutrition, secretion, absorption and the evolution of heat, are all equally influenced. And whatever affects the nervous system, producing either of these conditions, whether from acting within or without the body, invariably gives rise to corresponding results throughout the entire animal economy. The character of the circulating stream is an indication,—an exact measure of the prevailing powers of the nervous system.

VIII. We have elsewhere entered at length into the analysis of the properties of the nervous system,* and our limited space on the present occasion, as well as the considerations by which we are guided in this undertaking, will permit us to state only the general facts at which we have arrived. The nervous system is the controlling agent in every vital operation. It gives to every molecule of organic matter the power in virtue of which it performs its part in the comprehensive functions of life. It alone furnishes that

* The Philosophy of animated Nature, or the Laws and action of the Nervous System, 1848; and Practical Views on Nervous Diseases, 1849.

principle which ministers to the mental faculties,—awakens thought, and rouses the passions and instincts of the animated being, or at least imparts the force and energy with which they are variously expressed.

Is it possible to imagine that the large nervous masses and their innumerable radiating cords, extending to the minutest fibre of organic structure,—are endowed with no pervading principle? Can this be agreeably to the plan distinguishing the works of creation? To the plant nature gives light and air, and it is placed in a medium, whether of the soil or atmosphere, abounding in electricity, which is, also, evolved according to the vigour of the vital processes. Shall we, therefore, regard the nervous masses and their associated nerves, as having no agent in constant play in the uninterrupted operations of life? The idea is not less absurd than it would be to contend, that the arteries are not the channels for the distribution of the blood.

IX. If such be the comprehensive relations which the nervous system establishes with all parts of the body, and such indeed the influence which it unceasingly exerts, it follows, as an indisputable consequence, THAT EVERY DISEASE, WHETHER LOCAL OR GENERAL, IS PRIMARILY A DERANGEMENT OF NERVOUS MATTER. No other structure can be regarded as susceptible of impressions. The alteration of a vital function necessarily implies a modification in the condition of a something which controuls and maintains it; and the active principle can alone exist in the nerves. It is illogical to suppose that any

deviation in a vital action can possibly have any other origin. What is it that increases or diminishes a natural secretion? The question admits of one answer only: a change in the state of the nervous energy. What is it that converts voluntary into involuntary movements, that causes spasms, acute pain, severe nervous affections, blunts or destroys sensibility, *but a modification in the circumstances of that agent in virtue of which the ordinary operations of life are carried on?* There are not two powers in the animal system, one regulating the vital functions in health, and the other, in disease. It is always the same power variously influenced in its operations.

x. It may probably be urged as an objection to these remarks, that the blood is occasionally obviously deteriorated in its qualities, materially diminished in its nutritious elements, and hence the different secretions are vitiated. This will at once be admitted. But what produces these effects? Is the blood formed independently of the nervous energy? One would imagine from the argument that such an opinion was entertained. Were we to analyze the causes co-operating in the production of it, as the salivary glands, the stomach, the smaller intestines, the pancreas and the liver, it would be easy to prove that the contribution of each towards the general result, *depended on the condition of the nerves of the several organs.* If the salivary glands, the stomach, the liver and the pancreas, fail to secrete the necessary fluids, the cause is still to be referred to a disordered condition of their nerves: or if the smaller intestines, whether from irritation or inflammation, do not effi-

ciently absorb the chyle, the cause is, nevertheless, to be traced to the abnormal condition of their nerves.

XI. One other objection may possibly arise. It may, and with truth, be asserted that the properties of the circulating fluid are largely dependent on the nature of the ingesta; and, therefore, if these be deficient in nutritious elements, the vital powers generally will be enfeebled, and more or less disordered. This is inevitable. The office of the nervous system is not to create abundant or good blood, BUT SIMPLY TO REGULATE THE ACTIONS OF THE DIFFERENT STRUCTURES TO WHICH IT IS TRANSMITTED. In every stage of digestion, and in every subsequent process essential to the health and well-being of the body, the nervous energy is the presiding and controlling power.

XII. The deductions which flow from this train of reasoning, in reference to the treatment of disease, must be obvious to the ordinary understanding. If such be the influence of the nervous system, and its derangement be the source whence every aberration of vital action originates,—a conclusion which is indisputable, it is clear, that the remedial measures to be prompt, safe, and effective,—measures making the least possible demand on the energies of the animal system; or in other words, not uselessly wasting its powers, MUST HAVE AN ESPECIAL APPLICATION TO THE NERVOUS SYSTEM. The prevailing practice of bleeding, purging, and otherwise exhausting these energies, may succeed in the attainment of its object; but it is often a coarse, indirect, and expensive method, not less to be condemned on the ground of its

unphilosophical character, than on the want of economical considerations.

It is high time that the medical profession were roused to the consciousness of the value of the vital powers on which they frequently draw so largely. To husband them with the most refined calculations,—with a regard proportionate to their importance, is a rule that should rarely be departed from. They are powers not to be recklessly abused, but to be elaborately studied, *as instruments by which and on which we have to act;* and the more intact they are maintained, or the less disturbed by our interference, the more ample are the means to arrest or controul all abnormal actions. In their aggregate, they may be likened to a stream that, at one time, suddenly reaches the level of its banks, in the riotous excitement of disease; and at another, from depression, as quickly falls below it; but in neither case is there necessarily an increase or diminution in the amount of the circulating fluid. It is simply altered in its distribution. Both these conditions are to be traced equally to the same source, — the nervous system; and to subdue the aggravated action, in the one instance, as well as to resuscitate the faltering powers in the other, our remedies must have an especial reference to the properties and influence of the same widely pervading system.

XIII. These remarks are suggestive of practical considerations of deep interest. They direct the mind, for the first time, in a broad and undeviating path to the source of all vital phenomena; point out the nature of their initial deviations from health; and

with equal clearness indicate the medium through which they may be efficiently corrected, at the least possible expense to the energies of life. To illustrate the application of the views here brought under notice, would be to analyze every morbid condition to which flesh is heir. Though the task would be inadequately accomplished, from the want of ability commensurate with its requirements, the attempt would, nevertheless, tend to elucidate and establish, at every step of the inquiry, the general accuracy of the principles laid down. We shall, in the subsequent pages, though briefly and imperfectly, from the limited space to which the investigation will be restricted, exhibit the application of them to the solution of numerous difficulties involved in the consideration of the origin and nature of several important diseases. Previous, however, to entering upon this undertaking, we shall offer a few further observations on the relations, which all parts of the body maintain with the nervous system, as displayed in their alterations from health.

XIV. The brain and the spinal cord being the sources whence every organ derives its vitality, it is easy to conceive that a derangement of any tissue, be it inflammation, irritation, or debility, is a condition which may possibly give rise to extraordinary constitutional symptoms. The nerves cannot be seriously affected, at their extremities, in any situation, without inducing a corresponding alteration in the functions of the great nervous centres. We cannot arrest or otherwise disturb the course of a stream, without immediately influencing the motion of the volume of waters above it. It is thus with the dis-

ordered nerves in their relations to the brain and spinal cord, with this difference,—a difference characteristic of vital properties,—that the *re-action* which takes place in these centres, or the impressions made upon them, are productive of every possible variety of morbid phenomena, such as augmented sensibility, betraying itself in an anxious, watchful, and suspicious manner; or in an irritability of temper, as difficult to be borne with as it is to bear: or the nervous disturbance may pass into the more serious forms of mental hallucinations and incontrollable violence. Other effects, also, frequently present themselves, as hysteria, epilepsy, severe local pains, cramps or spasms, at one time attacking the lower extremities; at another the muscles of the loins, neck, chest, or stomach, or the organs of speech or deglutition.

It would be a tedious task to attempt to enumerate the diversified indications of nervous affections, springing out of the disordered functions of the brain and spinal cord, and *attributable to the impressions conveyed from the suffering organs, whether of animal or organic life.*

xv. These facts have a practical value, in reference to the judicious treatment of disease, to which we must briefly allude. They clearly show, that though the morbid action may originally have been limited to a particular locality, this is quickly overstepped from the irritated nerves gradually establishing extensive relations with the brain or spinal cord, until at length the local affection is lost in the constitutional disturbance. Indeed, other *foci* of ir-

regular action are set up, and each claims especial attention. Fortunately, however, for the well-being of the patient, the mind can scarcely be perplexed in its determination as to the best mode of meeting the difficulties. How various soever the symptoms may be, they are equally to be traced to the nervous system, and the important consideration is, to select a remedy calculated to subdue the manifestation of its abnormal influence. The appropriate remedy will rarely be bleeding, purging, blistering, or means which exhaust the animal economy; but remedies which conserve whilst they judiciously correct the vital functions.

The fact, that all deviations from health originate in the modified agency of the nervous system, and that all changes of vital action, whatever may be their nature, are to be traced to it, will ultimately open out views on the vast and engrossing subject of remedial treatment, far simpler and more comprehensive than any which at present generally prevail.

To understand disease, or to be in a position to select its appropriate remedy, we must never lose sight of the nature of the source whence it originates, or the equally important truth, that it can only be safely, efficiently, and directly controlled, with a due regard to the value of the powers of life, by measures which immediately influence the condition of nervous matter.

CHAPTER II.

THE ORIGIN AND NATURE OF INDIGESTION.

XVI. THERE is scarcely any disease that has been so elaborately or frequently investigated in all its forms and manifestations, as indigestion ; or that has given rise to a greater variety of opinions concerning its pathology and treatment. It appears to be regarded as a legitimate field for all sorts of speculations, as well as for the application of every imaginable remedy. The three kingdoms have almost been exhausted of their riches in the endeavour to combat its multifarious symptoms. Simplicity is alone evidence of truth. When no two persons agree concerning the nature of any morbid affection, and indeed when neither entertains the same views for any length of time, if these are to be gathered from the practice adopted, it may be inferred, without any presumption, that much remains to be accomplished in reference to it.

We do not flatter ourselves that we shall be able satisfactorily to solve the whole of the difficulties connected with this intricate and embarrassing inquiry. Our efforts, on this occasion, will be limited to a few general observations, rather for the purpose of indicating the mode in which it should be

conducted, than attempting to fill up the outline which is sketched.

XVII. The first step is to define what is understood by indigestion. Its prominent symptoms are various. An attack may be either sudden and acute, or it may be slowly and imperceptibly induced by numerous circumstances: it may result from the direct derangement of the stomach or its associated organs: or it may be the effect of constitutional debility or disease existing in other parts of the body. To the consideration of these distinctions we shall subsequently return.

The ordinary symptoms of dyspepsia are diminished appetite, a sense of weight, oppression or uneasiness at the epigastrium after a full meal; loathing of food, nausea or vomiting; an acute or dull pain at the pit of the stomach, frequently much aggravated on slight pressure; a torpid or irregular state of the bowels; the tongue occasionally quite clean, but generally more or less furred, the papillæ being elevated and enlarged; at other times it is white and flabby; acrid or acid eructations, heartburn, flatulence, distension of the stomach or bowels, or both, are among the leading indications of indigestion. There are various other symptoms, such as flushing of the face, increased heat of the hands, cold extremities, chilness or shivering after a meal and great thirst.

If the disease is not arrested in its earlier stages it will give rise to every form of constitutional disorder. The nervous system generally becomes obviously implicated, and exhibits a wide class of sympathetic phenomena. The sufferer becomes exceedingly irri-

table, restless and suspicious; entertains a variety of ridiculous fancies; is exceedingly susceptible of all sorts of impressions. The unexpected visit of a friend causes palpitation and tremulous movements of the whole body. Occasionally the voice is excessively feeble, or for a time is altogether lost: cramps or spasms attack the hands, the muscles of the lower extremities, or of the loins, back, neck or chest. Severe nervous affections are, also, frequently present, and the senses generally are affected, their sensibility being blunted or morbidly excited. The muscles of different parts of the body are often sore to the touch and especially on motion.

It is not at all unusual for the individual to imagine that he suffers from disease of the heart, or from aneurism of some important artery, as the aorta, from the strong and audible contractions of the former, and the violent pulsations, at some point, along the course of the latter. The writer has had these delusions, and has laboured under many of the symptoms which he describes. Experience has made him familiar with some of the most distressing forms of the affection, and in his case they were seriously protracted and aggravated by injudicious treatment.

Numerous other symptoms mark the progress or continued severity of dyspepsia. A short and irritable cough, at one time unaccompanied by expectoration; at another, this is copious and occasionally of a thick consistency approximating to purulent matter. We have seen instances in which it was difficult to determine the source of the secretion, and particularly when the patient was known to suffer

frequently from disturbance of the lungs, independently of any obvious co-existing derangement of the digestive organs. These are among the anxious and perplexing cases in practice.

The condition of the skin and muscles is always significant of the prevailing state of the vital powers. That of the former is variously modified. At one time, displaying a yellow or dirty brown tinge; at another, it is pale and exsanguineous, and is liable to be disfigured by every species of eruptive disease. The muscles become soft and flabby and often in a remarkable manner in the course of a few days.

With respect to the secretions generally they are always more or less disordered. Those which are peculiar to the female, are arrested or greatly diminished in amount. Sometimes, however, from debility, they are excessive in quantity. The secretions of the salivary glands, stomach, liver, intestines and kidneys, are invariably affected; but in such different degrees and modes as not to admit of any accurate classification; and the same may, also, be said of the phenomena of the pulse which is usually quicker and smaller than in health.

No symptom is so generally present as constipation, or so important in the analysis of the nature, relations and treatment of the disease. The misinterpretation of the causes in which this symptom originates, and of the nervous conditions with which it is associated, has been the fruitful source of injudicious and baneful practice. It is not necessary to extend this catalogue of morbid indications. It is sufficiently copious to illustrate the forms of derangement charac-

teristic of the several stages of indigestion. Other symptoms, in the course of the subsequent investigation, will naturally fall under observation. Our object is to be general and not minute in the examination of phenomena; or if we deviate from the rule it will be in the consideration of the nervous conditions which are the foundation of all dyspeptic disorders.

XVIII. The causes of indigestion may be divided into two great classes: first those which act immediately on the stomach or bowels; and secondly those which by exciting or depressing other parts of the body, indirectly disturb the conditions of these organs. Among the first, is the wide class of ingesta, which, either from their quality or quantity, are constant sources of derangement. They sometimes at once give rise to distressing symptoms from their indigestibility or irritating properties. They more frequently, however, slowly and imperceptibly produce their injurious effects, which may be generally traced to the baneful habit of pampering or stimulating the appetite, giving the stomach a greater amount of food than it can properly act upon; or in other ways making an undue demand on its vital energies. Wine, spirits, tea and coffee taken immoderately, or under circumstances unfavourable to their grateful and beneficial influence, belong, also, to this class of disturbing causes. Each is fraught with good, if discretion, as to quantity and occasion, regulate its use. The existing state of society, the excessive mental and bodily exertion by which it is characterized; and the severe and almost unceasing drains upon the vital energies, impart, at times, to these articles, regarded as luxu-

ries, an influence as potent and as imperatively required, as that which is exercised by the most nutritious food, to resuscitate the flagging and exhausted powers of life. The benefit they confer does not consist in furnishing to the system materials essential to compensate for its waste, *but in placing the digestive organs, and indeed the entire animal economy, in a condition to appropriate efficiently the ingesta received.* Their relation to the body is as that of the water to the wheel which it puts in motion. Viewed in this light, they are among the necessaries of life and to a far greater extent than is usually imagined.

It must not be supposed from the foregoing remarks that these articles are indispensable to all. We speak of them as having a use in reference to certain bodily conditions, and numerous instances are daily occurring where the pertinacious abstinence from generous stimulants, allows debility or functional derangement to pass into extensive and incurable structural changes.

XIX. Among the other causes falling under the same general category,—causes producing dyspepsia from acting directly on the digestive organs, *is the frequent use of medicinal agents.* They are a source of disease and to a degree not easy accurately to describe. If persons could for a moment justly conceive the nature of the actions performed by these organs, and the various sympathies and powers which they call into play, they would hesitate in swallowing the frequently recurring doses of active remedies. The prevailing practice of drugging the animal system disorders and poisons its vital proper-

ties. It lays the foundation of a vast amount of disease. It is mostly an injudicious and reckless mode, in regard to these properties, of attaining the object in view. The vital powers are prostrated by the severity of the means employed, or are so thoroughly deranged or modified in their action, that a long and often an ineffectual struggle ensues to re-establish their former vigorous conditions. The nature of the difficulty is very inadequately appreciated. The morbid symptoms may be removed, but the measures by which this has been accomplished, not unfrequently leave traces of their influence which is painfully manifested throughout existence. They produce a susceptibility to disease, to every form of functional disorder, and they create a dependence upon factitious aid, which is incompatible with the free, easy and luxurious enjoyment of life. To enumerate the particular effects consequent on this habitual dependence, would be to present a long catalogue of incurable evils the origin of which is little suspected by the sufferers.

Nature has given these different vital powers not to be ruthlessly or carelessly dealt with by our interference; but to be studied in their delicate and complicated conditions,—to be traced in all their comprehensive associations, and so accurately estimated in the relative influences which they exercise, that the knowledge resulting *will suggest treatment, that while it economically conserves these powers, will be equal to the correction of their temporary deviations.*

XX. Among the baneful causes of indigestion is unquestionably the frequent use of purgatives. Independently of the direct irritation they produce

throughout the whole of the digestive apparatus, *they occasion a serious waste of the vital energies.* The abundant intestinal secretions which they promote, are generally an unnecessary expenditure of the powers of life, by which is to be understood not only the blood, but the nervous principle, and the loss of these is the inevitable disturbance of the exquisitely adjusted relations associating all organs in the production of one result, viz., health. In vigorous youth or manhood, the evidence of the fact may not be apparent; but where these powers are nicely balanced, and only just equal to their duties, active purgatives are almost invariably fraught with baneful consequences. They may relieve or remove the symptoms for which they are prescribed, but they often leave behind conditions which predispose to numerous other ailments. The end which they are intended to serve, may, in the majority of cases, be effected by giving additional tone to the digestive organs,—in one word, *by soliciting nature indirectly.* To the consideration of this important subject we shall presently revert.

The next class of causes which come under consideration, are those which indirectly produce dyspepsia,—causes operating on parts of the body more or less remote from the digestive organs. Among these are sedentary pursuits,—close mental application,—anxiety, ill-regulated passions,—inordinate sensual indulgences,—depression of the mind —loss of blood,—excessive secretions, undue bodily exertion, the suppression of natural functions, and all local irritations.

XXI. Each of these several causes will exert a

specific influence on the animal economy,—will be accompanied by symptoms characterizing its particular operation, though in many instances it would be a task of no ordinary difficulty accurately to define them. It is not, however, necessary for the broad line of inquiry by which we are guided. These different causes give rise to important changes in the condition of the nervous and circulatory systems. The impression is first made upon the former, and it variously modifies the entire functions of life. The nervous energy may be depressed or unduly excited, but in whatever mode it may be influenced, the effects will always be associated with an obvious derangement of the properties and motion of the blood.

Our present object is to explain the nature of that state of the nervous system which is induced by these several causes, the occasion not only of dyspeptic, but a wide variety of other symptoms. It is in fact a peculiar, and at the same time a general condition of the whole of the nervous structure; and its tendency to give rise to indigestion, is only one of the diversified forms of disease of which it may be regarded as the foundation. We will endeavour to illustrate our views by a few brief remarks on the consequences which arise from the operation of one or more of these causes. Mental exertion, conjoined with close or uninterrupted application, is incompatible with the well-being of the body.

Health is the result of the normal action of the different organs, which, in the aggregate, constitute the animal economy. Thought is an expenditure of nervous power, and if carried beyond legitimate

limits, it exhausts that which is imperatively required by every function, whether digestion, circulation, secretion, or nutrition ; and which is equally essential to the continuance of its own exercise. The nervous system generally is disturbed both in its properties and influence. Every structure becomes unequal to the correct performance of its duties. Hence the digestive apparatus, as a part of the general scheme of organization, is involved in the induced derangement. The simplest ingesta may possibly excite the most distressing symptoms, as nausea, vomiting, heartburn, palpitation, or a feeling of oppression and uneasiness. The food is the exciting cause, but the *predisposition depends exclusively on existing nervous conditions*,—conditions pervading every portion of nervous matter. The dyspeptic symptoms are evidence of the new susceptibilities created ; or in other words, of the debility of the viscera by which they are manifested,—a debility, however, which is participated in by the entire nervous system. It appears, therefore, clear, that to treat on just principles the particular symptoms which present themselves, it is imperative that the nervous system, in which they originate, should be investigated in all its comprehensive relations.

It must not be imagined that the undue exercise of thought will alone explain the occurrence of indigestion under these circumstances. The position and inactive state of the body, in connexion with sedentary pursuits, are causes which largely co-operate in its production. The circulation, independently of all cerebral influence, is disordered by them, and the

healthy properties of the blood are proportionately affected; and hence the nervous and the circulatory systems are equally disturbed.

The view, which these imperfect considerations suggest, and from its importance it cannot be too strongly impressed upon the mind, has for its object the elucidation of the morbid state of the nervous system generally in association with dyspeptic symptoms. While these are to be studied in their local relations, the judicious selection of appropriate measures to correct them,—to re-establish the broken balance of the powers of life, will be found mainly in such as embrace in their application the aggregate of these powers.

XXII. Were we to give a further example of the mode in which any one of the several causes enumerated, deranges the functions of the nervous system, giving rise to indigestion, we should allude to the effects flowing from the excessive indulgence of the animal passions, whether in a mode agreeably to the laws of nature, or in their too frequent and awful infringement. To this source is to be traced an immense variety of morbid phenomena, in fact every species of nervous affection, as well as every form of disease, such as softening of the brain and spinal cord, structural changes of the lungs, and heart; impotency, sterility, gradual emaciation and premature death.

Such indulgence is at the expense of the nervous energy. This is wasted in directions, and to an extent incompatible with the permanent and normal actions of all organs. Indigestion is one of the common effects falling under observation. The appe-

tite loses its keenness and relish for food, and the stomach the power of readily converting it into chyme. Hence heartburn, flatulence or oppression at the epigastrium, nausea, vomiting, an extremely torpid or relaxed state of the bowels, spasms, and an incapacity for any mental effort requiring the consecutive exercise of thought, are among the many results which follow. To know the nature of the cause, in such cases, is more than half the cure. And the ignorance of it, or not justly estimating the nervous condition which it produces, renders the successful treatment of them exceedingly difficult.

XXIII. From the foregoing remarks, it is clear that dyspepsia is attributable to two very different classes of causes. The one originating in the digestive organs; the other in situations more or less remote, various indeed in its localities, nature and range of sympathies.

It is unnecessary to urge the importance of always keeping this distinction steadily in view, when the consideration is the correction of the disease. But in whatever light this is studied, it is invariably a nervous disorder; or in other terms, *is dependent on the morbid condition of the nerves of the stomach and its associated viscera.* How diversified, however, the symptoms may be, it in no degree modifies the force or truthfulness of the doctrine here laid down; and unless this oneness of source be adopted in all its comprehensive suggestions, the treatment will necessarily be tedious and frequently unsuccessful.

XXIV. Writers, on indigestion, have endeavoured to classify the symptoms under two general heads: the

one indicating a deficiency of *nervous* power,—an atonic state; the other, an exaltation or increase of it, which has been designated vascular *erethism* or irritative dyspepsia. The phenomena, at one time, are evidence of great weakness of the digestive organs, of an inability to elaborate properly the simplest kind of food. They are the seat of no particular pain, except on the reception of ingesta, and then it is seldom acute. The feeble pulse, the pallid expression of the countenance, the exsanguineous appearance of the body; the tendency to cramps and spasms, and general languor, as well as various other symptoms, may, with propriety, be included in the first of these two classes. Those of the second, are widely different, though the morbid conditions of both will imperceptibly run into each other. They are more frequently found associated or mixed than existing alone. In the pure cases of the latter description, there is usually, if not invariably, severe pain at the pit of the stomach, at times so distressing that the features pourtray with unerring accuracy its locality, and on slight pressure it is greatly aggravated: in fact to such a degree is the sensibility occasionally exalted, that the attempt to examine the part causes the patient instinctively to shrink from the touch. The countenance is often flushed, alternating heat and chilliness are experienced; the pulse is smaller and quicker than natural, though not unfrequently comparatively strong; the palms of the hands and the soles of the feet are sometimes disagreeably hot, the skin dry, the tongue parched, the eyes peculiarly brilliant, the temples throb, or the

whole forehead burns with intense heat or is insufferably heavy.

XXV. The foregoing are a few of the symptoms by which the two classes are characterized. There are others, which we shall not, at present, particularize,—save one, viz., the state of the bowels. In both classes, as a rule, constipation is a prevailing condition. In the first, however, it is seldom so obstinate as in the second,—a distinction which has not been clearly pointed out by writers; nor has the cause been justly traced. Diarrhœa is an occasional symptom, in the first class, or is readily promoted by aperient remedies: in the second, it is exceedingly rare, and far more difficult to induce. The greater irritation of the stomach, in the latter, which is to be measured by the augmented sensibility, draws to it a large amount of nervous energy necessarily from the neighbouring organs, as the liver and intestines, consequently these are to a great extent deprived of that power essential to their action; or from the radiation of the irritation to these viscera, they are unfavourably situated for the exercise of their normal functions.

XXVI. Indigestion, presenting greatly exalted sensibility, has almost universally been regarded as dependent on inflammation of the mucous membrane of the stomach, and has been treated agreeably to such view, frequently aggravating and protracting the distressing malady. That this sensitive and important membrane may, at times, be in that state considered by pathologists as evidence of inflammation, we will not question. But such morbid condition is no less

nervous in its origin, character and progress. What has modified the structure and functions of the membrane,—*an alteration in the properties of its nerves?* It would be unphilosophical to attempt to discover any other cause. All vital action is alone traceable to the direct influence of the nervous system. It is this which exclusively imparts to all tissues their contractility, sensibility or a susceptibility of being acted upon. Hence the structural changes in the mucous membrane are entirely referable to the disturbed operations of the nerves.

The doctrine of inflammation has undergone some modifications of late years, especially in reference to the severe forms of dyspepsia; but not from juster or more comprehensive views being entertained concerning the properties or influence of the nervous system. The change, and the improvement in the treatment, have been forced upon the profession, in some degree, by the results of their own observation, but mainly by the labours of a few enlightened continental writers.

Were the relations of the nervous system to all parts of the animal economy accurately or generally understood, as well as the inevitable dependence of all actions on this system, whether normal or otherwise, we should hear much less of inflammation, *or less of it as a condition considered apart from its proximate cause,—the disordered functions of the nerves locally implicated.*

XXVII. An eminent and indefatigable writer, in discussing the pathology of indigestion, observes: that it "manifestly proceeds from the following *conditions* of

the stomach and related organs, either of which may be somewhat more prominent than the rest :—First. Impaired organic nervous power of the stomach. Secondly. A deficient or disordered state of the gastric juice, or a want of a due relation between the quantity and nature of this fluid and the ingesta. Thirdly. Impaired absorbing power of the stomach, rendering the digestion of the fluid ingesta more or less difficult, and weakening the gastric fluid. Fourthly. Diminished muscular energy of the stomach ; the motions and tonic vermicular actions of the organ being weakened, and the admixture of the gastric juice with the ingesta being thereby impeded or delayed."*

This admirable writer specifies four conditions, in which indigestion originates, not one of which can be shown to exist independently of a disturbed state of the nerves of the stomach, as its proximate cause. But, further, it is unphilosophical, as well as at variance with correct physiological principles, to attempt to establish such distinctions, *as conditions having no necessary relation to the nervous system.* They are mere figments of the mind,—narrow and distorted views of vital properties.

We have evidence of the disordered state of the gastric juice, and consequently of a derangement between the relation of this fluid and the ingesta, *or at least between these and the stomach.* If the evidence be at all doubtful, it is of little moment to the argument ; *because all secretions must inevitably change, both in quality and quantity, with every modi-*

* A Dictionary of Practical medicine, part V., p. 33.—By James Copland, M.D., F.R.S.

fied action of their several organs. But how is it possible to conceive the altered gastric juice as a cause of indigestion, independently of a corresponding alteration in the nerves of the stomach? The fluid is simply the result of associated vital operations, the exciting and governing agent being the nervous energy. If the gastric juice is disordered in its properties,—is unequal to its duties, it *can only become so from the disturbed functions of the nerves;* consequently it is to these that indigestion is to be traced, and not to the particular secretion in the production of which it co-operates.

The morbid secretion though an effect, as here explained, may, from its presence in the stomach, materially aggravate the nervous conditions of its sensitive membrane, and hence, in this limited point of view, it is a cause which it is of importance to correct. But how important soever it may be, the consideration of it should not so far influence the mind as to allow it to lose sight of the proximate cause of the diversified symptoms, viz., THE ALTERED PROPERTIES OR ACTION OF THE NERVES LOCALLY INVOLVED IN EVERY STAGE OF THE DISEASE.

It is impossible to prove that dyspepsia is to be referred to the "impaired absorbing power of the stomach." It can only be received as a conjecture. But suppose it to be established. What is the inference? Is it that absorption is altogether independent of the nervous system? If not, why is a condition urged as a cause which does not allow of demonstration?

But admitting its existence to be placed beyond all

doubt, it is an effect which is to be traced to the modified functions of the nerves; and no treatment, in reference to indigestion, can be otherwise than purely empirical, which is not based on the study and appreciation of the morbid conditions of the nervous system.

"Diminished muscular energy of the stomach," is adduced by the writer as another cause of indigestion, and considered as a particular derangement independent of nervous agency. The foregoing strictures apply with equal force to the distinction which he here labours to establish.

Muscular energy cannot exist apart from nervous power. Every degree or modification of it, is an exact representation of the amount of nervous influence brought into operation. The fibres of all tissues endowed with contractility, whether manifested by the stomach, intestines, the voluntary or involuntary muscles, are dependent on the nerves for the exercise of their various contractile properties; and, therefore, it is unphilosophical to speak of *muscular* energy as a condition independent of the nervous system. The correction of such erroneous modes of reasoning has an important bearing on physiological inquiries generally, as well as on the efficient treatment of indigestion.

The mind that has its attention fixed upon the impaired muscular energy, as one of the causes of this disease, and yet regarded as having no intimate or necessary connexion with the nerves, or indeed not analyzed in its relations to them, is certainly not in a position to lay down well defined principles to regulate the selection and employment of remedial measures. These

principles cannot, in any degree, be suggested by such limited and inaccurate reasoning. To suppose it possible, would be as illogical as to assert that a knowledge of the functions of life is not at all essential to the easy, safe and prompt correction of their deviations from health. Empiricism, founded on extensive experience and observation, may be equal to the accomplishment of much good; but at best it is groping in twilight in the attainment of its object. It is only on just and comprehensive views of the animal economy, that the mind, in the contemplation of disease, can appreciate the nature of its manifestations,—the difficulties which it presents, so as to bring into energetic play the vast resources of the healing art,—resources far greater than the consideration of existing medical doctrines places at our command; the judicious application of which must be the result of patient and profound investigations into the springs of the ever-varying phenomena of vital action.

XXVIII. It is remarkable how slightly the nervous system has been studied in its relations to the diseases of the digestive organs. In some treatises it is scarcely ever mentioned. It might in fact have no existence. In one of the most recent monographs on the subject,* by a gentleman who has taught, in one of the most distinguished metropolitan schools for seventeen years the views which he now gives to the world, *the nerves are alluded to only once*, and the re-

* Thoughts on the nature and treatment of several severe Diseases of the Human body. By Edward J. Seymour, M.D., F.R.S., Vol, I , 1847.

marks upon them do not occupy two lines. This is suggestive of painful reflections. If those whom circumstances have placed in such a professional position, are so little sensible of the part which nervous matter performs in the animal economy, or of its disturbance in all morbid affections, regarded either as effect or cause, we may reasonably excuse in the many, whose sphere of observation is far more limited, the want of enlarged and correct ideas on the nature and treatment not of indigestion only, but of disease generally.

XXIX. Wilson Philip attempted to show that consumption is frequently to be traced to indigestion, and the disease, so originating, has been termed *dyspeptic phthisis.* The same view has been adopted by succeeding writers. That derangement of the digestive organs should occasionally produce this disease, is not extraordinary. As the health and well-being of the body depend on the accuracy with which they perform their important functions, the long continued disturbance of them will necessarily give rise to deteriorated properties of the blood,—the source of all nutrition. The nervous system will become feeble and unequal to its duties, and every secretion will be proportionately affected. While admitting, however, these effects as flowing from the long continuance of indigestion, we are inclined to suspect that a more general cause has been overlooked,—a a cause to which the dyspeptic symptoms themselves are to be referred, *viz., the disordered condition of the nervous system.* Cases which have fallen under our own observation strengthen this opinion. The dys-

pepsia usually masks for some time the gradual changes taking place in the lungs. The attention is almost entirely absorbed by the manifestations of the former, and little importance is attached to the occasional symptoms of the latter, being considered as sympathetic of the deranged functions of the digestive organs.

Those cases of indigestion which have appeared to give rise to consumption, have generally presented indications somewhat peculiar in their character. The figure has usually been slight and delicate, the constitution exceedingly susceptible of impressions, and a want of tone has been the prevailing condition of the powers of life. The symptoms of indigestion have been accompanied by a greater tenseness and prominence of the abdomen, a smaller and quicker pulse, and a greater proneness to emaciation, than ordinarily mark the severe forms of indigestion.

It may further be observed, that the prominence and tenderness of the abdomen, are often extremely difficult to remove in those instances, and when by local applications, alteratives, tonics, and other means, the object has, in a great measure, been attained, *it is then that the lungs unequivocally exhibit the symptoms of structural changes.* The sub-acute inflammation, which had long existed in the viscera, had not only withdrawn the attention of the practitioner from the respiratory organs, but it had, also, as a *focus* of irritation, so far relieved these organs, or influenced the distribution of the blood and nervous energy, that the expression of their morbid phenomena was

partially obscured. Consumption usually makes, in those cases, rapid progress on the correction of the urgent symptoms ascribed to dyspepsia.

The disappointment which we have frequently experienced in the treatment of the cases alluded to, has led for many years to a much more minute examination of the lungs, than we had previously given to them, as well as to a more guarded opinion concerning the probable issue of the disease. It has, at the same time, forced upon the mind the conviction, that dyspepsia, in place of being a frequent cause of phthisis, is itself an effect of the disordered condition of the nervous system generally,—a condition to which is to be referred the origin and progress of consumption.

XXX. In the preceding observations we incidentally adverted to one symptom of dyspepsia; which is seldom absent, viz., constipation; nor is there one of greater importance, whether the vital conditions out of which it arises, or the influence it exerts, be considered. There is no symptom, the value of which is so inadequately understood, both by the profession and mankind generally, as constipation. It may be said to be universally regarded as a state of the animal economy, which it is most desirable to remove, and hence the constant employment of aperient remedies. The practice is fraught with incalculable mischief. We have little hesitation in asserting that the usually long continuance of indigestion, the difficulty experienced in mitigating its severe forms, and especially the nervous affections with which it is almost invariably accompanied, are, to an immense

extent, attributable to the baneful irritation and exhausting tendency of active purgatives.

To feel the full force of this remark, it is necessary that the causes and nature of constipation, occurring in delicate and dyspeptic subjects, should be clearly explained. The symptom is admitted to prevail among those whose pursuits are sedentary, or which exercise inordinately the mind: and also particularly in females, who lead listless or inactive lives from constitutional weakness, or from the absence of motives to stimulate to bodily exertion; as well as in a large class, who waste or enfeeble the vital powers in sensual indulgences. In these, food is usually taken sparingly, or at irregular intervals.

These cases must not be confounded with another class,—individuals whose occupations may likewise be sedentary, but whose appetite is mostly good and substantially gratified; too frequently pampered by a greater variety, or a greater amount of ingesta than is compatible with health. The dyspeptic symptoms which these present, are as different in their manifestations as they are in their origin from those to which we have just alluded, and require for their successful treatment a proportionate modification in the measures employed.

The intense application of the mind, whatever be the nature of its pursuits, and everything that tends to enfeeble the vital energies, occasion general exhaustion of the nervous system. The delicate in constitution, though by no means suffering from the influence of the same exact causes, are, nevertheless, characterized by the same species of debility; and

our observations, with certain unimportant reservations, will be equally applicable to the whole class. THE CONSTIPATION, IN THESE INSTANCES, ARISES FROM A DEFICIENCY OF NERVOUS ENERGY DISTRIBUTED TO THE ENTIRE DIGESTIVE APPARATUS. It is the important condition to which attention should be directed. It is associated with other circumstances co-operating in the production of the particular effect, such as general weakness of the circulatory system, and especially the absence of a due quantity of elaborated food in the bowels.

The nervous energy, like the blood, will be modified in its amount, as well as in distribution, according to the demands made upon it. If wasted or disturbed in its action by mental exertion, anxiety, depressing passions, or other causes, the digestive organs will be inadequately supplied with it, without which they cannot perform their several functions. It is the power on which their secretions and contractility unceasingly depend. The state of the circulation, in connexion with dyspeptic symptoms, invariably corresponds with that of the nervous system. If the latter be weak, the former will be similarly affected. The general conditions of the two will ever be the same. If from the circumstances specified, the nervous principle transmitted to the bowels, is diminished in amount, the blood will be unequal to the discharge of its duties, either from its abridged quantity or deteriorated properties. The blood flows to all parts of the body in perfect harmony with their vital actions, and the extent or vigour of these is in the ratio of

the number and activity of the nerves distributed to the material instruments of life.

In reference to constipation, arising from *an insufficient amount of elaborated food in the bowels*, the circumstance is replete with interest, and demands an attentive consideration. It has never been considered in all its important physiological relations to the digestive organs; and to this is to be ascribed the baneful and unphilosophical character of the measures usually employed to correct their disordered action. All things being equal, the contractions of the heart are strong or weak, according to the quantity and stimulating qualities of the blood. The same doctrine will apply, also, to the motions of the bowels. In order that these shall be able to act with regularity, or agreeably to the necessities of nature, it is clear that they must be supplied not only with a proper amount of food, but with such as is fitted to stimulate them. The quantity is the important condition.

In the majority of the cases of dyspepsia, occurring in delicate, exhausted or debilitated constitutions, characterized by the want of appetite, or which is not gratified from the fear of taking food of a substantial kind, but more frequently from the injurious habit of living largely on liquids, the digestive organs, independently of the causes already considered, are insufficiently supplied with the means indispensable to their healthy and vigorous operations. To expect the bowels to perform efficiently their functions, under such circumstances, would be as absurd as to calculate on the rapid and

continued motions of the water-wheel, when deprived of the fluid by which it is propelled. They must have a due amount of nutritive matter; and further, they must be allowed, within certain limits, AND THESE MUST BE LIBERAL, TO TAKE THEIR OWN TIME IN ACTING UPON WHAT THEY RECEIVE, AS WELL AS IN REJECTING THE RESIDUE OF THEIR VITAL ACTIONS.

XXXI. Constipation is not only a symptom of indigestion,—of the debilitated powers of the body, *but is a means which nature frequently employs to conserve her energies.* It is regarded as an evil, obstructing the harmonious play of the properties of life. Nature indicates by it, in the cases under consideration, an inability to discharge her duties, —a faltering in her actions, a struggling in her efforts to accomplish the end assigned to her. Our non-interference with her operations,—save mildly and judiciously to solicit, not force, is the office we are called upon to exercise.

The remote intervals at which the bowels act,— or the remarkable torpor which they occasionally exhibit, is a period of rest, during which they are gradually accumulating the vital energies essential to their normal functions; and if not injudiciously disturbed during the slow process of restoration, which may occupy months, they, at length, are sufficiently aroused and invigorated to perform with regularity their important duties.

During this nursing or economical conservation of the powers of life, the whole animal economy participates in the advantage. The nervous and the cir-

culatory systems acquire additional resources, the pulse becomes stronger and less frequent, the muscles are increased in tone, and the countenance is fuller or less haggard in its expression.

XXXII. If these remarks, founded not less on extensive experience, than on physiological considerations, possess the importance which is here insisted upon, it will at once be evident that the practice of drugging the system, with alternating purgatives, tonics and alteratives, at one time prostrating the digestive organs, at another, studying to restore them, is a procedure calculated to do immense injury to the finely-balanced powers of life. It may produce the desired result,—may compel the torpid bowels to act; but it is urging them beyond their strength, and ultimately they will do nothing for themselves, always waiting to be assisted. Purgatives do not rouse their unexcited energies alone into play. Those which are awakened and determined to the alimentary canal, are drawn from remote parts,—from the system at large, and hence the debility, and the variety of nervous affections consequent on the frequent action of such remedies.

XXXIII. It is the first time that indigestion has been studied in these different points of view. If the assertion be questioned, a reference to a multitude of treatises on the subject will establish its correctness; and, it will equally show the absence of all clear and well-defined principles concerning its treatment. How could this possibly possess any degree of uniformity,—even a uniformity in harmony with the various symptoms, when by some writers the

nervous system is scarcely once alluded to in their inquiries concerning indigestion; and by the most enlightened is only incidentally touched upon? By none has it been investigated in its comprehensive relations to the powers of life, either in health or disease; and hence the ever clashing opinions on the origin, nature, and treatment of its varied morbid phenomena.

XXXIV. There are few disorders that may not readily be brought within the comprehension of the non-professional reader: that may not be so explained as to convey an accurate idea of their character, and of the state of the vital powers out of which they arise, or with which they become associated during their progress. Such information is far more valuable than the publication of a multitude of cases corroborative of the efficacy of certain modes of treatment. The one course is full of practical suggestions. It gives an insight into principles. It stimulates the mind and enlarges its conceptions. The other throws little or no light upon the vital functions. The former teaches man to think and investigate. The latter limits his observation to a few alleged facts, and even these are often involved in much darkness.

XXXV. If the views which are here developed, explanatory of the source and nature of indigestion, be justly founded, it will scarcely be doubted that the treatment in harmony with them, will be widely different from that which prevails. If the disease possess the extensive relations to the nervous system which have been described, springing indeed directly out of its disturbed conditions, *the remedies employed*

must have an especial reference to such system. And, as a general rule, their object should be to soothe and strengthen it; to place it in a position to exercise with greater regularity and force its oppressed and struggling energies. Our business should be to husband these, leaving to them the important duty of re-establishing the normal functions of life. They will flow where they are required, in a grateful and invigorating stream, if not interrupted by our officious and unnecessary interference.

XXXVI. Simplicity of practice is proportionate to the justness of our ideas on the nature of disease. If the treatment of dyspepsia is to be estimated by this consideration, the accuracy of which is unquestionable, what amount of knowledge does it indicate among the most enlightened of the profession? No two are in accordance, and no one is in harmony with himself. The doctrines by which he is guided to-day, are changed on the morrow. He racks his ingenuity in search of remedies, instead of searching after principles, or endeavouring to analyze the wide field of vital action, leaving to the results at which he arrives, the suggestion of appropriate measures.

XXXVII. According to the foregoing remarks, every form of indigestion is to be traced to a disturbance of the functions of particular portions of the nervous system, and is associated more or less with its general derangement. On this view only is it possible to account for the organic changes which occur. These may be discovered in almost every part of the body. The liver becomes congested, indurated or is otherwise modified in structure; the

parietes of the heart are usually thinner and much less firm than natural; the stomach and the bowels are also variously affected. Their capacity, at one time, is greatly enlarged; at another, equally contracted. The mucous membrane is frequently exsanguineous in appearance. Occasionally, however, there are patches of intense redness, and other alterations which are ascribed to previous inflammatory action. The substance of the brain and spinal cord is paler and softer than in the conditions of health.

XXXVIII. The extent and character of the modifications will depend not only on the severity of the disease, its duration and complications, but on constitutional peculiarities and the habits of the patient. Nevertheless, whatever may be the degree of the affection, it is invariably accompanied with the depression or exhaustion of the nervous system. And according as either state prevails, will the qualities of the blood be deteriorated, and the heart and the circulatory apparatus be rendered incapable of maintaining in vigorous operation the functions of life. Hence the feebleness with which the vital fluid is distributed to the extremities and surface of the body, as well as to the great nervous centres; and its consequent tendency to accumulate in the abdominal viscera.

XXXIX. Writers treat of many diseases as functional, that is, unaccompanied with organic alterations. Such diseases are of less frequent occurrence than is generally imagined. There may be an endless variety of degrees in the nature of the modifications,

and unquestionably a wide distinction is to be made between such as are slight, and others which are permanent and incurable. Every morbid affection, however, originates in structural changes. In many cases it may chiefly be a disturbance in the distribution of the nervous principle. This, if unduly accumulated in one situation, will be proportionately withdrawn from some other; hence a locally excited action is an exact measure of the depression either immediately or subsequently induced in the animal system. Many of the symptoms which present themselves after the removal of disease,—symptoms by no means easy to correct, are to be traced to a constitutional derangement originating in such nervous disturbance.

XL. If the foregoing principles be justly founded, it is not extraordinary that the successful treatment of dyspepsia should frequently be attended with no ordinary difficulties. The digestive organs are not alone involved in the existing derangement; but, in fact, the entire animal economy. It becomes ultimately a disease of the whole body, and consequently, in its aggravated form, does not readily yield to any of the various measures enforced.

We do not hesitate to assert that much of its intractable character, is altogether attributable to the unceasing purely medical efforts which are employed. The practitioner is seldom satisfied in doing nothing. He has much to learn in reference to the value of his non-interference with the complicated functions of life. He often disturbs nature in her struggles to re-establish the balance of health. She will do much

if let alone, or if judiciously assisted by proper regulations in respect of diet, exercise, clothing, rest, and other simple means.

We will endeavour to describe one of these inveterate cases of indigestion for the purpose of illustrating the justness of these remarks. The patient, who has long been dyspeptic, probably complains of the following among other symptoms: the loss of appetite, or the inability to take food without severe pain, exciting nausea or vomiting; the bowels are constipated, and seldom, if ever, act without the aid of medicine; the abdomen has lost much of its ordinary fulness or prominence, occasionally it is distended with flatulence; but in the worst or most inveterate cases, the former condition more frequently prevails; the urine is usually extremely limpid. In the earlier stages of the disease, it was high coloured and deposited a copious sediment. The pulse is small and somewhat accelerated; the tongue comparatively clean, presenting neither a polished appearance nor elevated papillæ; the surface, however, is generally smoother than natural. The patient rarely sleeps soundly. His slumbers are short and disturbed. He is nervous and irritable, and the attempt to minister to his imagined tastes rather annoys than gratifies him.

The muscles have become soft and flabby, and the body is considerably attenuated. The countenance is peculiarly characteristic of the disease, or of the general bodily conditions induced. It is mostly pale, or presents a slightly jaundiced aspect. The features are thin, sharp in their outlines, and

the expression painfully anxious. The eyes are generally bright and restless in their motion.

On inquiring into the history of the case it is found that leeches, blisters and other external applications, have repeatedly been employed. Purgatives, stimulants, tonics, carminatives, alteratives, and anodynes, alone and in combination, have also been administered during the protracted course of the disease with little alleviation and no permanent benefit. Internal remedies, under such circumstances, except of the mildest imaginable kind, will effect no good, but will almost invariably be fraught with evil.

There are two considerations which should regulate the treatment. The one is, not to interfere, in any way, with the enfeebled actions of the digestive apparatus by aperients, tonics, alteratives or opiates. The first class of these agents will further exhaust the vital energies; the second will rarely produce the anticipated results, from the want of tone or power in the viscera on which they directly operate. In order that they shall be capable of imparting new life to them, *it is imperatively necessary that there shall be a considerable amount of inherent vigour in the organs thus immediately influenced.* The absence of this is the cause of the frequent inefficiency of such remedies.

Alteratives, from the existence of the same bodily conditions, are equally inapplicable. Occasionally, when judiciously prescribed, they are invaluable. They change with marvellous facility morbid actions, correct the secretions, remove congestion, wherever situated, and promote the flow of

stagnant and vitiated fluids. In the case we are contemplating, they often do harm. They irritate, exhaust and further disorder the animal system. The properties of life are not sufficiently abounding to admit of their employment. They, and every other class of medicinal agents, have been had recourse to in the earlier stages of the affection and with little advantage.

Opiates or anodynes are equally inadmissible. They may possibly soothe or calm the nervous irritability; they more frequently, however, aggravate it, and disturb the already embarrassed and struggling powers of life. These require rest, or at least the cessation of our interference.

The second of the two considerations, is to endeavour to invigorate the system. In the attempt to accomplish this we have ample means at our command, independently of the imagined efficacy of medicinal agents. We have the whole surface of the body on which to operate, which may be variously and beneficially influenced. The bowels, how torpid soever they may be, must not be excited by any *internal* remedies. Nature must be allowed to take her own time, to adopt her own course in her struggling efforts to collect her feeble energies; and the repose of these organs is an essential and imperative condition. When once, from the exercise of her own powers, the desired result is efficiently accomplished, an important step is gained,—a broad foundation is laid for subsequent improvement. She may be materially assisted in her endeavours by repeated friction with the hand over the abdomen

and along the spine. This seldom fails in producing the desired effect. Those who have had no experience in such a remedy can form no adequate idea of the vast amount of good which it is capable of conferring. It awakens the nervous energy both in the great nervous centres and throughout the abdominal viscera. Every fibre of the body participates in the improved vital actions.

These are not the observations of a visionary who has speculated only on disease in the closet, and who has had no opportunity of testing the correctness of his views at the bedside of the patient; but of one, who, for quarter of a century, has delighted in the exercise of his art, and has sought with avidity every occasion to extend and refine its application.

The practice here recommended is of immense value, not merely in the treatment of the class of cases under consideration, but in many other morbid conditions to which it is not necessary in this place to allude. Its influence is not limited to the nervous system. This unquestionably receives the first impressions, and as an inevitable effect it rouses and invigorates the circulation. It puts an increased amount of blood into active motion, and proportionately improves its properties, and thus tends to diffuse throughout the animal economy a more healthy and vitalizing stream. Every step which is attained in this direction imparts additional vigour to the body.

The more equal distribution of the blood, compelling it to assume new relations, is a change which permanently modifies the conditions in which morbid

action originates, whether characterized by congestion, weakness, exhaustion, or inflammation in its different stages. A new character of vital operations is induced, and if its gradual development be not arrested by injudicious interference, a variety of symptoms, which have perplexed and embarrassed the practitioner, will imperceptibly disappear. When a certain degree of improvement is effected, other means may then legitimately and with great advantage be employed. The animal system is brought into a state in which internal remedies may co-operate successfully in the completion of the cure. We object not to their use, but to their abuse,—to the dependence upon them under circumstances unfavourable to their action. It falls not within the scope of this inquiry to show what these remedies should be, or what considerations should regulate their application.

The foregoing observations have had reference to a particular case, but one which may be regarded as representative of a large class, the symptoms of which present no ordinary difficulties to the practitioner. We have endeavoured to point out the nature of these difficulties, and the mode in which they may be safely overcome. We have dwelt especially on the importance of leaving the bowels to their own natural operations; and have shown how these may be facilitated; and have briefly touched upon the comprehensive constitutional changes consequent on the steady and repeated employment of this simple and efficient measure. Much more, and with equal truth, might be urged in its favour; but

from prudential considerations,—from a familiar acquaintance with the sceptical character of the professional mind, though at times it is disposed to adopt with avidity what is novel, we shall refrain from attempting to elucidate, at greater length, the nature of the influence which it exerts, or the various ways in which its application may be advantageously modified.

XLI. The preceding remarks have not simply a bearing on one class of dyspeptic cases. They have a reference to all. These differ only in the degree in which the nervous system is involved. The diversity of the symptoms is proportionate to the disturbance of this system. And though the same precise remedies are not equally applicable to the correction of the varied phenomena which fall under observation, there are, nevertheless, general considerations, which this analysis of the animal economy suggests, inseparably connected with the treatment of the affection in all its forms and stages.

We must not forget that the multiplicity of the means which are frequently employed, in the endeavour to remove or arrest the progress of disease, is evidence of our ignorance, and not of our knowledge, either of the functions of life, or of the nature of existing morbid conditions. He that knows little is apt to speculate largely,—to give many blows in the hope that some one will tell. Simplicity of treatment cannot be appreciated by such a mind.

XLII. We have said little on the important subjects of diet, exercise and clothing. In regard to the first, it is not possible to lay down any definite rules in

cases of indigestion. The habits of the patient, the stage or character of the disease, and other circumstances, must regulate both the quantity and quality of the ingesta. The same remarks apply to exercise. This is sometimes carried to too great extent by the dyspeptic. When indigestion arises from indulgence in the luxuries of the table, or in other words, from generous living or occasional excesses; or when indeed the symptoms are comparatively of recent origin, and are obviously to be traced to a disturbed rather than an exhausted state of the body, as indicated by the congested or inactive liver, and irregular action of the bowels, exercise on foot, in the open air, may be enforced to a liberal extent. When, however, the constitution has suffered long from the disease, though there may be no positive inability to take exercise, nevertheless, this should be regulated by a rigorous attention to the feelings of the patient. If it be followed by a sense of fatigue or weariness, it is almost invariably fraught with evil. Instead of strengthening, it depresses and weakens the powers of life.

In the higher, and among the affluent of the middle classes of society, indigestion, manifesting a variety of conditions, the immediate source of which is often little suspected, prevails largely. The causes are the pampered or indulged appetite, indolence and irregular hours of rest. The effects which these produce will not be efficiently corrected by carriage exercise. The various organs have to be stimulated and roused into increased action. The different secretions and fluids have to be accelerated

in their several directions, whether to undergo further changes essential to nutrition, or being no longer required, are consequently to be thrown off through their respective channels. Exercise on foot or on horseback is alone equal to these necessities. Occasional aperients will relieve the existing derangement,—will set the embarrassed wheels of life at liberty,—give them a freer play; they will, however, continually hesitate and falter in their movements. Perfect freedom of action, accompanied with the light and elastic feelings of health, is to be derived only from temperance and the invigorating muscular exertions of the body.

CHAPTER III.

THE ORIGIN AND NATURE OF PHTHISIS.

XLIII. In entering upon the present investigation, we do not propose to examine the many points of interest which the subject unquestionably possesses. Brief, however, as our remarks will be, they will bring under consideration certain important manifestations of the disease admitted to be involved in obscurity.

Had a knowledge of the structural changes of the lungs, as detected during life and after death, been a step calculated to elucidate the phenomena of consumption, further researches at this time would have been superfluous. Whatever the acute and practised pathologist can effect in this department of morbid anatomy, aided by the microscope, appears to have been accomplished. And yet with all his accumulated facts, he has thrown no light either upon the origin or nature of the malady. On both, the widest possible discrepancy of opinion prevails.

We will venture to assert that a more familiar acquaintance with the pathological conditions of phthisis, has scarcely in any degree improved its treatment. The measures recommended in its different stages to arrest or retard its progress, are as various and as opposed in character, as at any period in the

history of medical science. They display a lamentable absence of everything approximating to established principles, which alone are a test of the extent and soundness of existing information.

It is not by a refined analysis of morbid effects, as discovered after death, that we shall be enabled to ascend to the sources of them. It must be by a converse process. The study of the functions of life and of the laws by which they are governed, will alone guide our efforts in the endeavour to dispel the darkness which invests the initial steps of disease. As in a machine of complicated and elaborate mechanism, to perceive with intuitive quickness and exquisite precision, the cause which interrupts its motion, it is necessary to have a clear conception of its construction and of the nice dependence of one part upon another. Had nothing analogous in principle ever been observed in actual operation, the contemplation of it, at *rest,* would not,—save to the designer, suggest its liability to derangement, or if such occurred, would it permit us to trace the relations of such derangement to a perplexing series of wheels, pulleys, and springs The investigation of structural changes after death, IS THE STUDY OF THE ANIMAL MACHINE AT REST, WITHOUT REFERENCE TO A KNOWLEDGE OF THE VARIOUS FUNCTIONS WHICH MAINTAINED IT IN MOTION.

An undue estimate is formed of the value of pathological researches. They have a value, but it is far less in a practical point of view than is generally imagined. We are unwilling to believe that know-

ledge of any kind can ever be unproductive of good; and hence it is probable that such investigations may ultimately exhibit highly important relations to the healing art,—may indeed largely contribute towards its improvement. At present, however, their application is comparatively fruitless. The field certainly offers peculiar attractions and facilities for acquiring a reputation for enterprise and intelligence. The morbid conditions fall under the cognizance of the senses. They are objects which may be weighed, measured, and chemically analyzed. The talent which they bring into play is not necessarily great. An average amount, with industry, will confer considerable distinction. The further advantage of displaying these conditions in beautifully executed delineations, vying with the finished productions of the accomplished artist, has likewise imparted to these researches a seductive influence; and has tended to impress the profession themselves with an exaggerated idea of their value, and of the mental powers which they are supposed to have exercised.

It is not to be implied from these remarks that talent is not necessary to the cultivation of this particular pursuit; or that the success which accompanies it, will not be proportionate to the ability which is brought to bear upon it. There is room in the humblest, as well as in the most important of occupations, for the manifestation of excellence.

There is, at present, no clearly defined relations between pathological views and the remedies employed in the treatment of diseases generally. Nor does he, who has devoted his entire energies in the

elaborate development of the former, display a greater command of the resources of the medical art, in the mitigation of human suffering, than the ordinary practitioner, who is guided by the symptoms which fall under notice and the results of his experience.

It is, therefore, evident that the investigation of the structural changes of tissues, how admirably conducted soever it may be, is little calculated to throw any steady light on the nature of disease, or to suggest improved methods of treatment. The analysis of the effects will not elucidate the causes of them. These will be discovered only by a patient inquiry into the powers of life,—their mode of action, and the manner in which they are liable to be disturbed. The consideration of consumption will afford an illustration of the truth of these observations.

XLIV. In perusing with attention the numerous treatises that have been written on phthisis, it is remarkable how little the agency of the nervous system has been taken into account, in treating of the predisposing or exciting causes, or in determining the selection of remedial measures. In some of them this system is disposed of in a few lines. In many there is not the slightest allusion to it. In evidence of this we would refer to the learned and comparatively recent work of Mason Good, in which the disease is examined in its different phases with great minuteness.*

* In the long and elaborate article on Phthisis, in the "*Study of Medicine*," Vol. IV. p. 742, neither the nervous system nor the nerves are mentioned in connexion with it.

Phthisis is to be explained only on the disordered conditions of the nervous system. Whether we analyze the nature of the exciting or predisposing causes, we cannot take a step in the inquiry, in the attempt to arrive at any clear principles, without considering the properties and influence of this system. It is the point from which we must start, and the investigation will naturally lead us to the examination of the morbid results induced.

Every individual, from the innate endowments of his constitution, is predisposed to some particular disease. In one, the tendency is to consumption,—in another to scrofula,—in a third to nervous affections,—in a fourth to inflammation, gout, or apoplexy. By predisposition is to be understood such a state of the vital powers, as require only the presence of certain exciting causes to develop the morbid effect in harmony with them. The *proximate* cause, in all these instances, is to be traced to the peculiar influence exercised by the nervous system. Whether the body be robust or weak, or whatever may be its prevailing characteristics; whether the blood be superabundant or deficient; too stimulating or inadequately charged with vital properties, these different conditions *are to be referred to nervous agency.* It is this which confers on the various tissues their susceptibility of action. The stomach, according to the amount distributed to it, whether agreeably to the laws of its organization, or to temporary circumstances, is vigorous or feeble in the performance of its functions; and hence the quantity and quality of the circulating fluid, though apparently

to superficial observation to be ascribed to the ingesta, are, nevertheless, an exact representation of the prevailing influence of the nervous system. The powers by which the blood is maintained in motion, as the heart, the arteries, and the capillaries, are similarly dependent on the same nervous principle, and are modified in their operations in the ratio of the quantity which they receive.

It may, therefore, be shown that a predisposition to disease, has for its foundation a peculiar state of the nervous system; the consideration of which, in reference to phthisis, is worthy of our most patient examination; as it is in fact ON THE JUSTNESS OF THE VIEWS FORMED ON THIS SUBJECT, THAT ALL PREVENTIVE OR COUNTERACTING MEANS CAN POSSIBLY BE BASED.

XLV. In those who are predisposed to consumption, the whole body usually presents certain general characteristics which it is important to notice. The complexion is frequently fair, the skin smooth and soft, the muscles rarely well developed, or possessing much tone; the pulse is rather small and weak than otherwise, often quicker than in the robust constitution, and readily accelerated by trivial causes; the chest is for the most part narrow, or wanting in capacity; the shoulders are high, and the bones generally are prominent and sharp; the osseous structure is seldom abundantly clothed with flesh, certainly less frequently in the male than female; *fatigue, or a slight indisposition, rapidly produces a marked alteration in the strength and aspect of the body;* the appetite, though in some voracious, is usually nice or fasti-

dious; the bowels have rather a tendency to be relaxed than constipated, and are easily acted upon by aperient medicines; the eyes are mostly bright or brilliant in expression. The countenance occasionally displays exquisite beauty, but it is in association with structural qualities indicating a delicacy of organization, and a susceptibility of being readily influenced by external as well as internal causes.

XLVI. The analysis of these and other conditions establishes one important truth,—an innate constitutional weakness. The nervous system is prone to be either unduly excited or depressed; and as it regulates every vital action, it is easy to conceive the extraordinary liability of the system to impressions, whether from without or within, and at the same time to explain the frequent tendency of these to induce extensive structural changes in the respiratory organs.

No writer has attempted to show why in individuals so constituted, the prevailing disease should be pulmonary consumption. A conjecture of the kind does not exist in any work that has fallen under our observation. Nor indeed was it possible to offer a rational hypothesis, without far more comprehensive views of the laws of the animal economy than have hitherto been exhibited in the investigation of phthisis. When the most elaborate treatises upon it, contain scarcely one remark on the agency of the nervous system, and omit altogether the study of the nervous relations, by which different organs are united in harmonious operation, it would be unreasonable to expect any

well digested speculations on the subject. We shall endeavour to account for what has hitherto been regarded as inexplicable.

The first important matter which solicits attention, are the vital relations between the surface of the body and the internal organs generally. A clear conception of them in all their comprehensive bearings, will render the inquiry perfectly easy of comprehension. There are two immense surfaces which we have to consider: THE SURFACE OF THE BODY, AND THE INTERNAL SURFACE REPRESENTED BY THE WHOLE OF THE VISCERA. The two are in indissoluble association, and, at every moment of existence, reciprocally influence each other. Every change which takes place in the action of the one, modifies the condition of the other, though only to a perceptible extent when some inordinate manifestation is the result, as extreme pallor or perspiration in the one, or diarrhœa, difficulty of breathing, sickness or pain, in the other,—phenomena which each is capable of producing in the other from alterations in their respective vital states.

The extremes, in these instances, are valuable, as illustrations of the effects arising from the disturbance of the relations by which the two surfaces are connected. It must not, however, be imagined that no important changes ensue,—save on these occasions. The conclusion would be most unphilosophical. There are many degrees of impressions, from the grateful breeze that plays upon the surface of the body, and the cold easterly wind that chills and constricts its vessels; as well as between the

agreeable sensation arising from a moderate repast, and the heaviness, oppression or pain consequent on repletion. There are gradations much more refined in reference to causes modifying the vital conditions of these surfaces, or the influence of one surface upon the other, of which we are not at all conscious. The rise and fall of the pendulum are not more exact, than the unceasing play between the vital energies of both.

The next point which it is necessary to establish, is as inconvertible as the foregoing; indeed it is an inevitable consequence flowing from it. EVERY DISEASE IS A DERANGEMENT OF THE RELATIONS OF THESE SURFACES, AND VARIES WITH EVERY MODIFICATION OF THE MORBID ACTION. A slight disturbance of the functions of the skin, produces a watery discharge from the nose, cough, and a tightness in the chest; and a disordered state of the stomach or bowels, gives rise to a sense of chilliness or pallor of the entire surface of the body. The study of these relations, as we shall subsequently show, is fraught with great interest, in regard to the selection and application of remedial measures.

XLVII. In many diseases the skin is strikingly modified in its conditions. It varies with the severity of the symptoms. The heat of its surface is the greatest in inflammation of the respiratory organs, in acute rheumatism of the larger joints, and in most of the exanthemata or eruptive fevers. In these and numerous other cases, we perceive the intimate relations between the *internal* and *external* surfaces of

the body. The blood is necessarily altered both in its properties and distribution. If it has acquired additional stimulating qualities, the heart, the arteries and the capillaries are proportionately excited, and the living stream is transmitted in augmented quantity throughout the animal system. The distressing heat of the surface is not owing to this circumstance alone. A change in the properties of the blood, which could not be referred to increased vitality, may so disturb the functions of the skin as to interrupt the escape of the heat, and hence the phenomena resulting from its retention.

XLVIII. The modifications in the relations of the two surfaces, as exhibited in the foregoing instances, require no remarks to illustrate their bearing on the principles here laid down. They are evident and unquestionable. They are presented in an extreme degree, but on this account they are the more valuable, as enabling the mind to pass from what is obvious, to the analysis and appreciation of phenomena far less manifest to ordinary observation, yet equally indisputable.

In all aggravated chronic affections, which are characterized by diminished vital action, the blood is gradually withdrawn from the extremities and surface of the body, and accumulates either in the internal viscera generally, or in the organ diseased. This arises from the combined influence of two causes, viz., the deteriorated properties of the vital current, and the want of power in the heart and its associated vessels to maintain the requisite external circulation. The *proximate* cause, or that to which all the effects are

to be traced, IS THE ALTERED CONDITION OF THE NERVOUS SYSTEM, WHICH ALONE REGULATES THE FUNCTIONS OF LIFE.

We have endeavoured to show that the phthisical constitution, even in its highest state of health, is one of debility. It always possesses a proneness to derangement,—a susceptibility of morbid impressions. This implies not only a want of tone or vigour in those functions which co-operate in the production of chyle, or in its appropriation to the purposes of nutrition, but a peculiar and delicate balance between the internal and the external vital processes of the body. The disturbance of this balance may be detected almost invariably in those predisposed to consumption, long before its presence is indicated by the ordinary symptoms which awaken the suspicion or anxiety of friends, or induce them to seek advice. Its early manifestations are cold extremities, occasional chilliness, a numbness or deadness of the fingers without an apparently adequate cause, irregular action of the bowels, but especially to the acute observer, a perceptible loss of flesh. The features have become somewhat sharper, and, in the female, the bust is less ample in its development. The mammæ have partially disappeared or have become flaccid.

All these phenomena are full of significance and are important to note. They unequivocally prove the existence of internal mischief. It may be comparatively slight in degree, but it is sufficient to depress the energies of life, to disturb the normal relations between the *internal* and *external* surfaces. Nutri-

tion has been less active in the latter. The cause is to be sought in the incipient disease slowly progressing in the lungs, and in other organs with which they are intimately associated.

It is at this time that preventive measures may often be employed with wonderful success. Whatever mode of treatment be contemplated, it is clear that its application to be of any benefit, must exercise an influence capable of *restoring the natural balance of the circulation*. The cure depends on the accomplishment of this object.

Change of air or climate, a modification of diet, exercise, or habits of the patient, and certain medicinal agents, comprise the means which are usually had recourse to, under the most favourable circumstances, for arresting the insidious advances of phthisis. They may all be of great advantage, and should always enter largely into our consideration. They are not, however, among the most efficient of our resources. They are rather palliatives than measures thoroughly corrective of existing morbid conditions

XLIX. Studying the disease agreeably to the physiological views here developed, explanatory of the relations which unite the vital operations of the two surfaces, it is evident that we have at our command means of far greater potency than any which have hitherto been employed. We have the whole of the external surface, rich in its myriads of vessels, and equally affluent in the abundance of its nerves, on which we may act with extraordinary power. Keeping in mind that these vessels and nerves are indis-

soluble parts of the respective systems to which they belong, and that they cannot be excited to increased action by our interference, without influencing the condition of every living fibre of the animal economy, can it be doubted that in neglecting to take advantage of the properties of such surface in the application of remedial measures we have failed to bring to bear those resources which a comprehensive knowledge of the laws of life naturally suggests?

The persevering use of friction over the whole surface of the body, but especially over the chest, abdomen, and along the spine, is, in controlling the early stages of consumption, immeasurably the most efficacious agent in the wide range of medical science. None others, either alone or in combination, can for a moment be compared with it. Whatever view be taken of the origin or nature of phthisis, it will be admitted that it is a disease which not only gradually exhausts the energies of the system, but induces those morbid conditions both in the respiratory and other organs, *which progress at the expense of the circulating fluid.*

From the first deposition of the insidious germ, and throughout the subsequent structural changes which follow, the blood is drawn from without, inwards, to facilitate the ravages of disorganization. The disease attracts to it the forces of life.

Phthisis must not be regarded simply as an affection of the lungs. It may appear to have a special locality. Its principal seat is unquestionably in the chest, but the measures employed in the treatment of it, to be successful, must have a reference to the

entire animal economy. The digestive apparatus, the functions of secretion, absorption and nutrition, are invariably disordered, and not merely as consequences flowing from the morbid conditions of the lungs, but arising from derangement of the system generally in which phthisis itself originates.

L. Considering, therefore, the facility with which we can modify the motion, distribution and properties of the blood throughout the internal organs, by stimulating the external capillaries, our efforts should be concentrated in the endeavour to accomplish these changes. The means are the flesh brush, and occasionally the hand alone. The effects produced by their steady application, far exceed the sober calculations of the inexperienced practitioner, and indeed of all who are not familiar with the physiological principles on which they are explicable.

Let us briefly attempt to illustrate these effects.

The friction causes a marked alteration in the appearance and temperature of the body. The previously pale surface becomes florid and acquires additional heat. The extremities become warm. These phenomena are clearly to be traced to the abundant stream of blood brought from within, outwards. Does this imply no important internal change? In the ratio of the amount brought to the surface, is the relief which is afforded to the suffering organs. Nor must it be imagined that the improvement is temporary. If the means be perseveringly employed, the distribution and properties of the blood will be permanently modified. Numerous facts attest the accuracy of this assertion. A relaxed or

irregular state of the bowels will be corrected; a short and distressing cough may be removed; freer play will be given to the lungs, and all the functions will be brought into a healthier state. Not only will the process of emaciation be arrested, but the muscles will acquire additional tone, firmness and flesh. Stimulating liniments, and other external applications, may be advantageously conjoined with these simple measures, which differ not in the mode, but in the degree of their action.

The subject would admit of further illustrations, in reference to consumption and other diseases; but sufficient has been advanced to explain the views on which the practice is based. Its efficacy is fully established by experience, and on a scale too extensive to mislead in recommending it to the consideration of others.

LI. Let us not, however, be misunderstood in these remarks. The measures are not equally efficient in all stages of phthisis. They are peculiarly applicable as tending to *prevent* the development of the disease, as well as in controlling it in its early manifestations. It is under these circumstances that they exercise a powerful corrective influence. Nor is it to be imagined that they exclude the co-operation of internal remedies. Whatever is calculated to give additional tone and energy to the system, is to be adopted in the treatment of the disease. But we, nevertheless, unhesitatingly assert, that how various soever may be the medicinal agents which caprice or experience suggests, the most potent of the resources at our command, are those measures which permanently

modify the structure and functions of the entire surface of the body.

LII. Having explained, and endeavoured to illustrate, though briefly and imperfectly, the nature of the relations by which two vast surfaces are linked in every operation of life, the next important consideration is, why the lungs, in persons possessing the consumptive predisposition, should be especially liable to structural changes? The question is an important one, and worthy of investigation. To do justice to it, however, would require far more space and a much more elaborate analysis than we can possibly devote to it on this occasion. One, and the most prevailing source of phthisis arises from the vicissitudes of temperature. The effect does not fall equally on the internal organs; or in more correct language, these organs do not exhibit an equal susceptibility of derangement. A general cause of this kind must produce a change in the vital conditions of the whole of the internal viscera; BUT THE CHARACTER OF IT WILL VARY WITH THE STRUCTURE AND THE FUNCTIONS WHICH THEY PERFORM. The thorough understanding of this fact will throw a flood of light on the subject under consideration.

The internal organs, without any distinction, have the same vital relations to the surface of the body; but a difference in their organization and office, creates different degrees of liability to disorder. The stomach, the intestines, the liver and the kidneys, are secretory organs, by which is understood the secretion of a fluid which is peculiar to each, as gastric juice, mucus, bile, and urine. The

distinguishing peculiarity of these organs is, that whether depressed or excited by external causes, *the effect is a modification in the amount or quality of the fluid secreted.* If the secretion be greater than usual, it may often be regarded as an effort of nature, by which the temporary irritation of the organs is relieved: if less, and vitiated in its properties, within certain limits, the co-existing derangement, unaccompanied by any feeling of uneasiness, is readily corrected in an endless variety of instances.

These several organs are constantly more or less disturbed by external agencies, but from their structural conditions and functions, they possess peculiar facilities for relieving themselves. Suppose from a sudden change of temperature, from heat to cold, the impressions made upon the surface of the body constrict its vessels, the vital operations on this surface become less active, in consequence of a large portion of the blood being thrown upon the internal organs. The bowels, perhaps, display the first morbid manifestation, as pain succeeded by diarrhœa. In a vast number of cases the purging is a salutary effort, by which the congested and irritated vessels are enabled to return to their normal state. The same argument applies generally to the other organs alluded to.

To illustrate the force of these remarks, let us imagine these vessels to have no such provision, *but to be engaged in processes in which the only matters secreted or allowed to escape, is a gas or vapour, or both.* These circumstances would not be equally favourable to the re-establishment of their functions,

if suffering from congestion. The relation of the gas or vapour to the *amount* of the fluid circulating in these vessels; or the emission of either viewed in relation to such amount, is so widely different from the excited secretions of these vessels, in relation to their temporary increased contents, that it is evident very different results would follow. The vessels being deprived of the *substantial* provision by which nature is frequently enabled to correct their disordered functions, the irritation or congestion of them would be less likely to be relieved by such assumed process, and hence the morbid effect, in the ratio of such physiological difference, *would be a condition calculated to produce serious or permanent mischief in the tissue in which it is seated.*

LIII. These considerations naturally lead us to the examination of the functions of the lungs, in order to explain their tendency to organic changes in those predisposed to consumption. The lungs are exceedingly vascular. They contain a much greater quantity of blood, in relation to the structure in which it circulates, excepting of course the arteries and veins, than any other part of the body. This is the first important condition demanding especial attention. The blood is, also, distributed in extremely minute vessels, ramifying on the delicately formed air-cells, for the purpose of exposing the largest possible mass to the action of the inspired air, as well as for the emission of matters no longer required by, or injurious to the animal system if retained.

These two effects constitute the functions of the

lungs. Water, in the state of vapour, and carbonic acid gas, are expired. Oxygen and nitrogen are correspondingly inspired. To promote this interchange is the office of these organs. It is, therefore, evident that the elements thus disengaged and received, in relation to the mass of blood in the lungs, are indeed small in quantity. If from the agency of external causes, the vessels of any portion of the lungs become congested, or otherwise disordered, THEY HAVE NOT THE SAME MEANS AS THOSE OF THE STOMACH, BOWELS, LIVER OR KIDNEYS, FOR RELIEVING THEMSELVES OF THE CAUSE BY WHICH THEY ARE OPPRESSED. The gas and vapour emitted, will very slightly influence the existing congestion of the pulmonary capillaries, or tend to set the blood in motion, if stagnant. In fact such a condition, by *diminishing* the chemical changes of the blood, will place this fluid under unfavourable circumstances for the free action of the inspired air, which is essential to the interchange of the gaseous elements; consequently, so far from these vessels having an occasional provision in their structure and office, like that of the secretory organs in general, by which they frequently correct their excited or depressed functions, *such vessels lose, in the ratio of their derangement, the ability to relieve themselves by any modification of their condition.*

LIV. If these views be justly founded, do they not afford, for the first time, a rational explanation of the tendency of the lungs to structural changes in those predisposed to consumption? Are they not based on an accurate analysis of the properties of the organs

brought under notice? The liability of the lungs to disease, according to the principles here developed, does not arise from their greater weakness, as compared with other parts of the animal system, but is simply to be ascribed to a difference in their organization and functions. The predisposition to phthisis, implies a want of tone throughout the vital powers. It is not characterized by, nor is it indeed to be traced to any peculiar condition of the pulmonary organs themselves. We shall hereafter endeavour to show, that these views are not merely interesting, as elucidating a large class of phenomena, but have an extensive application bearing on the prevention of the disease, as well as in arresting its progress in its early stages. Did the space within which we propose to limit these researches, allow of more elaborate considerations, it would be easy to adduce various other facts in corroboration of the reasoning here advanced. These, however, we must leave to the suggestion of others.

LV. The foregoing inquiries have prepared the mind to enter upon another investigation, viz., *the mode in which the first structural changes take place in the lungs.* It is unnecessary to remark that various opinions are entertained on this subject. By some, it is urged that inflammation is the first step in the process; by others, that it is altogether independent of such a cause, being a peculiar degeneration of the tissues attacked. Writers have not attempted to trace the influence of external or internal causes on the powers of life to the production of the morbid result. They have commenced their

analysis with its earliest manifestation. There is, however, an antecedent stage which demands especial attention, viz., *the nature of the disturbance which these causes are capable of exciting in the functions of the lungs;* without a clear understanding of which, it is impossible to assign a rational hypothesis to account for the origin of the disease.

We will suppose the cause to be an abrupt transition from heat to cold, or exposure to a current of air while the body is warm, producing a *depressing* effect on the superficially seated vessels, of which the individual may not be conscious. As already frequently observed, all the processes of life are dependent upon and are regulated by the nervous system. Were the vessels in question not endowed with nervous power, they would be unsusceptible of external impressions, and consequently would be incapable of being constricted or diminished in calibre. If, therefore, all such processes are to be traced to nervous influence, it is not difficult to show what must be the nature of the effect on the capillaries of the lungs, from the depressed vital operations on the surface of the body. The blood that quits this surface must go somewhere; it will be distributed, in different degrees, according to circumstances, throughout the whole of the internal organs. A portion will be thrown upon the lungs. Some of their numerous capillaries will become congested, and hence they will be incapacitated for the performance of their office. The nervous principle that they possess, which in other situations is frequently aroused and removes the local impediment, is, in such constitu-

tions, and under such conditions, unequal to the exercise of this salutary effect, *and hence there is loss of nervous power co-existing with congestion of the pulmonary vessels.*

This is unquestionably the first stage of the morbid action, which may be rapidly aggravated so as to excite obvious symptoms of derangement; or it may remain for months or years comparatively stationary. We are convinced that we have repeatedly arrested its ravages when it has presented unequivocal indications of its presence, *from treating the disease according to the views here advanced in reference to its origin and nature.*

There is another argument which tends to throw light on the peculiar susceptibility of the lungs to structural changes, in the consumptive habit, and in the progress of phthisis. It will not be denied that the blood is subject to great modifications. It may not only be more or less stimulating, but more or less pure in its qualities or in the degree of its elaboration, and consequently variable in its fitness to minister to the functions of life. Evidence of this is established by numerous and undoubted facts. The altered properties of the secretions fall daily under observation. The vessels of all the secretory organs, in the exercise of their functions, cast off certain impurities or elements of the blood conveyed to them: the kidneys, by the secretion of urine, the liver, by that of bile, the stomach and the intestines, by their appropriate juices and mucus. In proportion as they are enabled to do this efficiently, the organs themselves, and the animal system at large, are relieved of matters, some

of which, if retained, would be productive of serious mischief. Their occasional want of power to accomplish this salutary effort, according to existing necessities, is the fruitful source of disease. And further, in corroboration of this view,—and indeed a striking illustration of its truth, what is designated a crisis,—a change in the condition of the vital energies, as manifested by excessive perspiration, or the copious flow of urine, is alone explicable on these considerations. The abundant and unexpected secretion which is thus induced, is a result arising from the improved and struggling efforts of the system, and relieves every organ of the body.

LVI. The lungs have no means, in the exercise of their functions, of throwing off the imperfectly elaborated elements of the blood, as the secretory organs generally. Its impurities, circulating in the minute capillaries of the delicately formed air-cells, will clearly place these vessels in a condition unfavourable to the performance of the important duties which belong to them. The blood and the capillaries re-act on each other, and the motion of the former is the result of this re-action. If, therefore, the blood, from improper food, imperfect digestion, or depression of the nervous system, is ill-adapted to the purposes of life, it will be liable to derange the properties of these vessels, producing partial congestion, and congestion of blood destitute of its ordinary stimulating and nutritious qualities. Hence its stagnation, at different points of the pulmonary tissue, will become the nucleus of extensive disease.

LVII. The principles explanatory of the difference

between the lungs and the secretory organs generally, in regard to their organization and office, elucidating the peculiar susceptibility of the former to structural changes, have not in any degree been suggested by any previous writer. The justness of the distinctions will scarcely be questioned, or their importance in a practical point of view.

We will further endeavour to analyze the nature and influence of the insidious germ of the disease, and trace it in its subsequent stages of development, or in other words, its gradual conversion into tuberculous degeneration. If we suppose the blood, or its imperfectly elaborated elements, to become stagnant in various situations of the pulmonary capillaries, though at the first forming mere isolated points, the matter, so arrested in its course, would be deficient in the ordinary properties of vitality, and would be withdrawn from the influence of the nervous energy essential to constitute it a part of the living system. It would, therefore, become an inorganic substance, and would act as a foreign body in the tissue in which it exists. Its subsequent enlargement and change of condition, are easy to account for. Once being deposited, the constitution continuing in the same state of predisposition, and other general circumstances remaining unaltered, it must inevitably progress. It will impede the circulation in the adjoining capillaries, and in proportion to its influence in this respect, will accelerate the deposition of similar matter. Thus the mere miliary or small grain-like tubercle, will become an extensive mass of disease, the pulmonary tissue being either broken down or converted into a fluid

of pulpy consistency. It is in this stage that the expectoration exhibits the properties of pus, which escapes through the bronchial ramifications in connexion with the morbid source. The whole of the matter has not this origin. The greater part of the mucous membrane lining the *air-tubes*, sympathizes with the existing local mischief, and adds largely to the sputa its own disordered secretions.

It is interesting to study the progress of the miliary tubercle to this termination, as well as the occasional efforts of nature to arrest the march of the disease,—efforts aroused into action by the presence of the accumulated matter. The conversion of the pulmonary tissue into a morbid mass, ultimately becoming fluid in its character, is easy of explanation. Every stage of the subsequent process of degeneration, is withdrawing that which is deposited from the vivifying agency of the blood and nervous energy, *by which alone the various elements of structure are held together*. Hence an organic change takes place agreeably to the laws regulating the operations of all animal and vegetable substances.

It very frequently happens that the local masses of disease are enclosed in cavities, separated from the adjoining portions of the pulmonary tissue by an exceedingly strong and thick membrane. This is a barrier to the extension of the structural changes in the vicinity of the morbid focus.

A cavity of immense size may occasionally exist, the rest of the lung being protected by this adventitious membrane; in consequence of which, the patient in the very last stages of consumption has recovered,

and enjoyed excellent health for a protracted period. Cases of this kind have fallen under our own observation. In one particular instance in which all the formidable symptoms of phthisis were present, the body being reduced to a mere skeleton, the disease was arrested, and the individual was capable of following a laborious occupation for nine years. At this time he died after a very short illness. A cavity was found in the right lung, which accounted for the previous extraordinary cure, in capacity far exceeding the bulk of the closed hand. There cannot be a doubt that such cases of recovery are much more frequent than is generally imagined; and hence the necessity, when apparently all rational hopes of improvement are dissipated, of supporting to the last the energies of life.

These salutary, or even ineffectual efforts of nature, are explicable on particular conditions of the lungs. Sometimes every portion of these organs has become almost impervious to the inspired air from the general infiltration of tuberculous matter. Such cases offer not the slightest chance of improvement. In other instances, these organs are affected in one or two situations only, the rest of their structure being comparatively healthy. Here recovery is by no means impossible. The formation of the false membrane *is unequivocal evidence, that, at this time, the adjoining tissue was sound.* Its development demands this condition. The tuberculous matter which is thus located acting as a foreign body, excites the neighbouring parts into inordinate action, and the result of the awakened vital powers, is the formation of this protecting membrane.

If, therefore, the consumptive symptoms can be traced to the existence of a single cavity, the respiratory murmur being heard distinctly throughout the rest of the lungs, it is our duty to endeavour, in every possible way, to keep up or strengthen the energies of the constitution. The ordinary treatment employed to allay the distressing cough, or facilitate the expectoration, will seldom accomplish the desired end. The object to be obtained will generally require very different means.

LVIII. The foregoing remarks are offered only as a mere sketch, and imperfect indeed in its outline, of the conditions of this formidable disease. The attempt to elucidate its origin and the causes influencing its progress, is of far higher practical value than the enumeration of a thousand and one remedies, which have been prescribed in different ages, and especially in modern times, in the treatment of it. These unfortunately have not been suggested by any accurate analysis of the circumstances, either exciting or predisposing, co-operating in its production; nor from any just views being entertained concerning the nature of the initial development of the structural changes, on a knowledge of which an efficient mode of treatment can alone be based.

LIX. Considerable practical experience, and in a field peculiarly favourable to extensive observation, has long led the writer to the belief that consumption, if judiciously treated, in an early stage, may be arrested in a great number of instances. The prevailing impression that it is incurable, tends very much to paralyze those exertions which ought to be called

vigorously into play. The usual methods pursued are simply palliative. On the supposition that inflammation exists, a blister or perhaps leeches are applied to the chest, and remedies administered which have often no other object than to allay a troublesome cough.

That inflammation may at times be present, will not be questioned. It is, however, almost invariably the result of existing organic changes in the lungs. It springs directly out of these changes, and the means which are employed to remove it or to keep it in subjection, in which are included medicinal agents and diet, rarely make any impression on the morbid structure in which it originates. On the contrary they are occasionally exceedingly injurious. They too frequently exhaust the strength of the patient, or allow the constitutional debility, characterizing the predisposition to the disease, to progress with extraordinary rapidity.

The conflicting views which are entertained on the nature of phthisis are extremely various, and of limited practical application. They confine the attention too exclusively to the lungs from the earliest manifestation of the malady to its fatal termination, instead of directing the mind to the study of the relations, nervous and sanguineous, between these organs and the rest of the animal economy. It never seems to be imagined that the structural changes are to be combated, arrested or alleviated, except by measures which are regarded as influencing immediately the state of the lungs. This is a narrow and unphilosophical mode of investigating any morbid condition. This may have

its particular locality, but it should never be forgotten that the organ in which it exists, draws its nervous energy and blood from other parts of the system, at the expense of which the disease is nourished and aggravated. In proportion to the wide range whence it derives these supplies, IS THE BOUNDLESS FIELD OF THE VITAL POWERS ON WHICH WE SHOULD OPERATE IN THE APPLICATION OF REMEDIES. Keeping, also, steadily in view the important fact, that the affection, though local, is generally to be traced to a disturbance of vital action at a distance; and therefore to act judiciously on remote parts of the body, or on the system at large, will often most effectually interrupt or control the progress of morbid action.

This doctrine applies with great force to the treatment of consumption, and the value of it, illustrated by principles explanatory of the powers of life, has not been prominently brought under consideration by any writer. On the present occasion, we shall simply glance at the vast remedial resources which a comprehensive understanding of these powers furnishes to the enlightened practitioner.

LX. According to the views which are here developed, it is evident that consumption cannot be regarded, with strict logical propriety, as inflammatory in its first and subsequent manifestations.

The disease, as already observed, may arise from the vicissitudes of temperature; or it may be the result of long-continued irritation in the bowels: and in fact whatever lowers the tone or vitality of

the animal system, where the phthisical predisposition prevails, will create a tendency to the formation of tubercles. The predisposition is characterized by debility, and it is in consequence of this state of the vital energies, liable to disturbance from a variety of external and internal influences, that the first structural changes in the lungs are to be ascribed. Inflammation does not pre-exist as a cause, nor does it in any important degree aggravate the progress of the malady, which is, *sui generis*, and originates in the deposition of matter in the pulmonary tissue. Occasionally such matter remains dormant or unproductive of evil for many years: it more frequently, however, gradually accumulates, and its presence is at length manifested by unequivocal indications. Whatever be the nature of the influences operating from without, (and they constitute the great class which we have to consider,) the first structural deviations in the lungs from a sound condition, are, as a general rule, independent of any inflammatory process. This implies the excited vitality of the parts implicated, the blood and the nervous energy being determined to them in augmented quantity. Traces of permanent disease may be left,—a change of structure,—a consolidation of tissue, but tubercles cannot be regarded as the natural results of such process. They are not to be referred to an increased local action, but to a diminished vitality of the pulmonary structure, in consequence of which certain of the minute vessels become unequal to the demands made upon them. They fail in the transmission of

their contents; *or have not the power of relieving themselves of that which becomes the germ of the subsequent changes.*

This inability may arise from the previous loss of nervous energy in the capillaries, or from the imperfectly elaborated blood which they receive. Both circumstances will usually be found to co-operate in the development of the initial steps of the morbid process.

In whatever point of view the predisposing and exciting causes of consumption be examined, and the inquiry embraces a wide survey of the vital powers, it is impossible to arrive at any other conclusion, than that the conditions to which it is to be traced, are characterized by local and general debility.

It is highly important that correct notions should be entertained on this subject, otherwise the treatment will be purely empirical, or regulated by the predominant symptoms which fall under observation, apart from a knowledge of the nature of the structural changes out of which they arise. To appreciate accurately the significance of these symptoms, it is necessary to understand that which is expressed by numerous others, which are inadequately seized even by the acute professional observer, who has not elaborately studied the functions of the animal economy in their comprehensive relations. The habitual contemplation of these can alone confer a refined power of analysis,—place the mind in a position to estimate justly the aggregate of the abnormal phenomena which every disease variously displays.

LXI. The inefficiency of art in arresting or con-

trolling the progress of consumption, is attributable less to the incurable nature of the disease than to the neglect of its earliest symptoms. The practitioner is seldom, if ever, consulted until its presence is manifested by unequivocal indications. His attention is then directed to an occasional tightness or pain in the chest, a short cough on slight exertion, or excited on awaking in the morning accompanied with a feeling of lassitude. How unimportant soever these may appear, the patient may rest assured that, at this time, the disease is not in its incipient stage. An earlier morbid action has been overlooked. Previous to the manifestation of these symptoms, there are other phenomena, easy of detection and appreciation, which mark the initial commencement of phthisis, at which period the judicious application of art would be beneficial in a vast number of instances. To illustrate the force of these remarks, we will examine the *antecedent* vital modifications occurring in the female. When the foregoing symptoms fall under notice, the body has generally lost a little of its ordinary plumpness or richness of development, especially the breasts, the upper part of the chest and neck; the flesh is less firm to the touch, and the countenance exhibits a greater delicacy of expression, —an expression which indicates, with unerring truthfulness, the effects of disturbed vital action. The appetite is more than usually fastidious, and the bowels exceedingly irregular in their functions. An inability to undergo the usual amount of fatigue is also experienced.

The appreciation of these symptoms is of para-

mount importance in reference to the well-being of the patient. The neglect in the employment of means, at this time, to correct the existing derangement, quickly gives rise to the subsequent stage of the disease, when it is deemed advisable to have recourse to the assistance of art,—a stage which is designated by writers as the first.

On this subject we speak from considerable personal observation, having, for a lengthened period in early life, had the advantage of studying affections of the chest under the distinguished Laennec; and our attention subsequently having, from peculiar circumstances, been devoted especially to their investigation, some of the results of which have been several years before the public.*

Is it not, therefore, evident, that where a predisposition to consumption is in any degree to be suspected, an earlier anxiety should be awakened to thoroughly understand the nature of these antecedent, and usually unnoticed, phenomena,—an anxiety to trace them to their existing sources, as it is at this time that art will frequently arrest the insidious advances of the malady?

The imagined incurable nature of phthisis is clearly attributable to the serious disorganization of the lungs, which, in persons possessing a marked predisposition to the disease, will often admit of considerable morbid deviations without being accompanied by symptoms expressive of the magnitude of the changes. A corresponding degree of structural alterations, occurring in the stomach, bowels, heart,

* Diseases of the Lungs from Mechanical causes.

or kidneys, would usually be followed by fatal effects, or displayed by unequivocal indications. Exceptions to the accuracy of these remarks may occasionally present themselves.

The slightest functional derangement of these several organs generally awakens attention. Were the incipient process of disease in the lungs inflammatory, it would, almost as an inevitable consequence, give evidence of its presence. The comparative insidiousness of its ravages, is a fact which strongly corroborates the justness of the views developed concerning its nature.

LXII. Pulmonary consumption is usually regarded as scrofulous in its character. Some writers, however, maintain that the morbid conditions by which they are distinguished have little in common. Scrofula attacks the various glands of the body; while phthisis makes its first inroads upon the lungs, which are entirely destitute of all glandular structure. It is impossible to draw a definite line of demarcation between the two. They imperceptibly run into each other; nevertheless there are general differences which it is important to note,—differences which have not been accurately seized. They are both diseases of debility,—display a want of tone in the vital powers, and in this respect they approximate in their nature. We shall endeavour to point out a few of the peculiarities by which each is characterized. Scrofula mostly manifests itself in infancy and childhood: phthisis at a much later period. Individuals predisposed to the former, are often of a full habit of body, the bones are well clothed with flesh,

but it is soft and flabby: there is a general laxity of the animal system. The appetite is frequently gross, and the digestive functions active. From these and other conditions, it is scarcely possible to misinterpret the indications of a scrofulous constitution. In those who are predisposed to phthisis, the body is usually much more spare or lean; there is greater sharpness or prominence of the bones, and the flesh, though smooth and soft, is less abundant than where the scrofulous diathesis decidedly prevails.

There is a remarkable distinction between the two, in regard to the properties and influence of the nervous system with which they are associated; and indeed to this is to be ascribed the constitutional differences. These are simply effects flowing from the co-existing states of the nervous system. In scrofula, the activity of this system is largely concentrated upon the digestive organs. In phthisis, *it is more equally distributed to the vital functions generally.* In the latter, the bodily movements are generally lighter; the mind is more lively and exuberant in its spirits; its perceptions are often more delicate, and the susceptibility of the animal frame to external impressions, is proportionately greater. Other differences, and the causes in which they originate, will be brought under consideration in the subsequent investigation of scrofula.

LXIII. It is asserted by several high authorities that phthisis is contagious, though only to a slight extent. We cannot conceive the slightest foundation for such a doctrine. We might with as much propriety speak of the contagious character of dys-

pepsia, or of rheumatism. That a prejudicial influence is capable of being exercised by the consumptive invalid on one in health, is unquestionable. If the latter should habitually sleep with, or be in close attendance upon the patient, the mind being depressed, or the feelings deeply interested, there are causes amply sufficient to generate the same disease. The morbid exhalations from the body, and the frequently impure atmosphere which is breathed, arising from a solicitude to maintain a uniformity of temperature, or to guard against currents of air, will gradually tend to undermine the tone and stamina of the soundest constitution, if the effects are not studiously counteracted by vigorous exercise, and by substantial, or rather generous living. It is under these circumstances only that consumption can have any tendency to produce the disease in another.

LXIV. Among the exciting or predisposing causes of phthisis, are enumerated the suppression of measles, various eruptions and hemorrhoids, rapid growth, as well as syphilis. There cannot be a doubt that the suppression of the eruptive diseases of infancy very often lays the foundation of consumption. The exanthemata have an important end to serve in the animal economy, and if this be imperfectly accomplished, the internal organs, from their intimate relations to the skin, are certain to sympathize in its disturbed conditions. The effects may be either temporary or permanent. They are frequently the latter, and the evidence of it is shown in after years, in an occasional short cough, arising from the vicissitudes of temperature, from

taking cold, or from derangement of the stomach or bowels. It is a symptom which often recurs, and at times in a form which excites no little anxiety. Each attack aggravates the structural changes which exist, until at length a scarcely perceptible cause completes the disorganization of the lungs. Such a symptom merits far more attention than it usually receives.

Phthisis is often the consequence of syphilis. We are, however, disposed to believe that this is less attributable to the disease than to the treatment to which it is subjected. How frequently are the powers of life thoroughly broken down by the unnecessarily severe measures employed! It is sometimes years before the animal system recovers its ordinary healthy conditions; and the constitutional effects are often to be traced through the remaining course of existence, in a wide variety of morbid indications, such as peculiar eruptions, enlargement and decay of the bones, impotency and premature old age, with all its accompanying phenomena. It is, therefore, not extraordinary, under these circumstances, that the structural changes of the lungs, occurring in the form of phthisis, should be in the train of the long catalogue of evils.

LXV. We come now to the analysis of another class of exciting or predisposing causes, which, from the physiological principles involved in the consideration of them, possess great practical interest, viz., speaking, singing, and the use of wind-instruments. The exercise of the respiratory organs, in these different ways, has frequently been alleged as causes of consumption. On this important matter we conceive

very erroneous views are entertained. When the disease has unequivocally manifested itself, such exercise is inadmissible; but in all who are delicate, or predisposed to phthisis, it is, within certain liberal limits, *among the most efficient means of prevention.* Its value, or mode of operation in relation to pulmonary consumption, has never been studied in a large or philosophical spirit, as is evident from its almost indiscriminate condemnation.

The chest and its contents, like every other part of the body, are liable to great modifications in form and capacity. With frequent energetic use, these conditions are greatly altered. The capacity of the chest may be augmented to the extent of several inches, both in circumference and depth, and the lungs will of course be proportionately enlarged; and hence their ability to receive and aerate the blood will be correspondingly increased. The benefit does not rest here. Every fibre of the body participates in the change. It is an improved fountain of health, whence is distributed a more copious and invigorating stream to all the powers of life.

To bring the force of these remarks within the comprehension of the ordinary understanding, we will endeavour, by a homely illustration, to elucidate the functions of the lungs, and the modifications induced in them by speaking, singing, and the use of wind-instruments; as well as the conditions consequent on the withdrawal of the exercise. The numerous air-cells of these organs have, in the aggregate, an immense capacity, each of which is abundantly supplied with minute vessels for the purpose of exposing their

contents to the action of the inspired air. We will suppose these cells to be represented by a partially inflated bladder. This will clearly be enlarged and diminished on the admission and expulsion of air. If the quantity received be considerable, as occurs, at intervals, in a successive series of full inspirations when speaking, singing, or blowing a wind-instrument, *the capacity of the bladder, if such causes were repeatedly in operation, would be permanently augmented;* and in such ratio would the amount of blood transmitted to the bladder be permanently increased, and likewise the power of improving its properties.

The predisposition to consumption consists in a peculiar delicacy of the lungs prone to derangement, the progress of which is accompanied by a diminution and gradual obliteration of the air-cells. To return to the illustration of the bladder, the initial steps of the morbid action are at the expense of its capacity, and the more limited this is naturally, supposing it to represent the functions of the lungs, the greater will be the evils arising from its abridgement, or in other words, the more rapid the structural changes induced in these organs.

LXVI. If the foregoing views be justly founded, is it not evident that among the preventive means of consumption, the first in importance and efficiency, is the frequently excited action of the lungs, enforced for the purpose of permanently augmenting their capacity, and thereby counteracting the tendency to disorganization? And yet among the exciting causes of the disease, all writers enumerate speaking, singing, and the use of wind-instruments, and omit alto-

gether in their considerations the advantages of the exercise, when properly directed and kept within its legitimate bounds. The orator, the professional singer, and the musician, who call into inordinate play the lungs, may, in comparatively early life, make demands upon the system at large, to which it is unequal,—may exhaust unduly its energies; and hence from the excess of vital action may lay the foundation of pulmonary disease. Let us not, however, while contemplating partial, or possible evils, lose sight of the physiological principles involved in the analysis of this species of exercise.

LXVII. The study of the origin and nature of consumption has led us to contemplate a variety of causes calculated to prevent the obstruction of the pulmonary capillaries, and the consequent obliteration of the air-cells, *which are the first stages of the morbid process.* The consideration of the circulatory and nervous systems, and the different modes in which they may be influenced, both from within and without the body, suggested, among numerous measures which may be employed to attain this object, the direct exercise of the respiratory organs. Of its extraordinary practical value, conjoined with other muscular movements, and with frequent friction along the spinal marrow, as well as on the surface of the body, when judiciously enforced, we can speak from extensive experience. We have no hesitation in stating, that these simple means, in the prevention of the disease, or in arresting it in its earliest manifestations, are unquestionably among the most efficient of the resources of the medical art.

They act beneficially on every fibre of the animal system. They promote the secretions of every organ, and impart to the powers of life generally, a vigour and energy which are displayed in greatly improved health.

It is scarcely necessary to remark, that long or loud speaking, singing, or the playing of wind instruments, is inadmissible when the disease has made considerable progress. In such cases we must bring to our aid other means which act less directly on the lungs, but which, nevertheless, if perseveringly employed, are capable of modifying materially the conditions of these organs. The chest may still be powerfully acted upon with advantage, by the repeated and varied movements of the arms, either with or without weights placed in the hands. It is hardly possible to speak in too high terms of the benefit resulting from such practice, even when the disease has passed its incipient stage.

There are two important considerations which we should ever keep steadily in view, in the treatment of consumption, at least in its early manifestations. The first is, to endeavour to enlarge the capacity of the chest,—to give free play to the lungs; the second is, to counteract the tendency to capillary congestion, —to the obstruction of the blood in the minute vessels. Whatever accomplishes the first object, will to a great extent facilitate the attainment of the second, which may likewise be greatly promoted by other means.

LXVIII. It is the duty of the philosophical inquirer to draw an accurate distinction between the use and

abuse of anything that has a relation to humanity. The abuse, or the mode in which it occurs, if properly examined, elucidates the utility of that, which, in excess, is fraught with mischief. As the enterprising chemist frequently finds in the analysis of the refuse of his operations new or valuable principles; so may the enlightened physiologist, in studying the injurious effects flowing from different medicinal agents, arrive at unexpected results bearing on the beneficial influences which these are capable of exerting. Whatever is potent to evil in extremes, is pregnant with a large amount of good in its accurately adjusted proportions, or under circumstances favourable to the development of its salutary virtues.

The occasional spitting of blood from violent or long continued action of the lungs, as in singing or speaking, is a phenomenon which shows, in a striking manner, the good that must necessarily arise from the exercise restrained within due limits, and confirms with peculiar force the accuracy of the foregoing remarks. The emission of the blood arises *from the greatly invigorated action of the pulmonary capillaries, —from the blood being transmitted to them in increased quantity;* and, therefore, though the inordinate exercise may at times be followed by such a result, it nevertheless points out the advantages that may be secured by its legitimate employment. In all its degrees it augments the vascularity of the lungs, and to promote this, where they are weak or inadequately developed, must be one of the absorbing considerations in every attempt to strengthen their powers, or to counteract their predisposition to disease.

LXIX. In the earlier part of this inquiry we endeavoured to trace the nature of the extensive relations associating the surface of the body and the lungs; and laboured to show in what manner a modification in the conditions of the former disturbed the functions of the latter, and in such a way as to be a frequent cause, if not one of the chief sources of consumption. The sympathy which the external and internal surfaces reciprocally exercise during every moment of existence, opens out a wide and fruitful field of investigation in reference to the discovery of preventive means. As before observed, in studying the mode in which injurious effects occur, by influencing the vital powers, we may get glimpses of physiological principles capable of important practical application,—principles which otherwise would scarcely have been suggested.

The more delicately balanced the relations between these surfaces, the greater will be the proneness to phthisis where the constitutional tendency prevails. It is as much within the resources of our ability to diminish the susceptibility to disorder, springing out of these finely-poised relations, as it is to strengthen or improve the senses, or to develop any part of the muscular system. One of the means by which this is to be accomplished, is by friction on the surface of the body. Not simply for the purpose of promoting its healthy secretions, but in order to impart to the EXTERNAL CAPILLARY SYSTEM PERMANENT VITAL CONDITIONS OF VASTLY INCREASED VIGOUR. It is difficult to convey to the mind the importance of such induced

changes in reference to the removal or prevention of morbid action. A familiar acquaintance with physiological principles is essential to its thorough appreciation. We will attempt to render it easy of comprehension by a simple illustration. Serious evils occasionally arise from persons bathing while the body is warm, and hence it has been imagined that it was wrong to bathe in this state of the system. This is a misconception of the conditions which guard against, or predispose to injurious consequences. The being *warm* does not imply danger; but being warm after previous exertion when the vital operations on the cutaneous surface and throughout the animal economy have become feeble, and, therefore, unequal to resist the depressing effects of the water.

This simple illustration will probably enable the reader clearly to understand the nature of the influence which the different degrees of vital action, in the superficially seated vessels, are capable of exerting on the animal system; to which point we are anxious to rivet his attention.

The constant application of the flesh brush to the entire surface of the body, but especially along the spine, is one of the most powerful agents, whether to invigorate the powers of life, or to counteract a predisposition to disease, with which we are acquainted. It removes internal congestion, and its subsequent stages,—irritation and inflammation; it promotes and regulates the secretions, and lays the foundation for the establishment of sound health. These are usually its ordinary effects, which we cannot afford space to analyze in detail. Our object is to ex-

plain generally the changes on the surface of the body consequent on the employment of the means in question.

If the excited action of the external capillaries, in the case of bathing, furnishes not only a protection against the depressing influence of cold water, but materially facilitates its beneficial agency; does it not, also, necessarily follow that the more vigorous the functions of these vessels become, from the frequent employment of friction, the less liable they will be to be prejudicially acted upon by the sudden vicissitudes of temperature? What constitutes their peculiar susceptibility of external impressions in persons of delicate constitution? Their weakness or the difficulty with which they perform their important duties? It is this weakness or inability to adapt themselves to the abrupt transitions or varying influences without, on which alone their extraordinary tendency to derangement depends. Their action is readily checked, and at the same moment, as a necessary consequence, are the functions of the capillaries of the lungs or of other internal organs immediately disordered: and it is the *repetition* of such disturbance in the relations of these two classes of vessels, the one situated without, and the other within the body, that gradually and imperceptibly gives rise to the structural changes in the pulmonary tissue characterizing consumption.

According to these views we have means of great power and efficacy at our command, to convert debility into comparative strength, or to counteract a constitutional predisposition to disease. Largely as the external surface is exposed to the agency of de-

pressing causes, from without, it is equally ample for the employment of remedial measures calculated to secure the system from their injurious influence. An accurate understanding of the physiological principles which explain the baneful operations of the one, will equally elucidate the mode in which the other acts.

It is from the long continuance of certain pursuits or occupations that particular parts of the muscular system are developed; and a change in the vital conditions of the external capillaries, and of their relations to the internal organs, can be effected only by measures properly applied and perseveringly employed. We must not calculate on immediately beneficial results.

As our object has not been to write an elaborate treatise on consumption, but simply to direct attention to the conditions of the body in which it originates, or which facilitate its progress, it does not fall within the scope of our plan to treat of diet, climate or the influence of particular circumstances on health. Our anxiety has been to impart a knowledge of the laws of the animal economy necessarily involved in the analysis of the disease. We purpose on some future occasion to enter fully into the investigation of its causes, nature and treatment.

CHAPTER IV.

THE ORIGIN AND NATURE OF SPASMS, AND PAINFUL AFFECTIONS OF THE NERVES.

LXX. HAVING in a recent publication discussed, at considerable length, the nature of these diseases, our remarks on the present occasion will be brief.* Spasms and neuralgic affections are among the most obscure derangements of the animal economy; nor have the important researches of Bell and Magendie tended in any degree to improve the treatment of them. Had the discoveries which they made, establishing the distinctions between the origin and office of the two classes of nerves,—nerves of sensation and motion, been fully understood in their comprehensive bearings on morbid action generally, the pathological views which prevail would have been distinguished by greater justness and practical value.

LXXI. The painful affections of nerves may arise from very different causes, and under widely different circumstances. The seat of the morbid action may be in the brain, at their peripheral extremities, or at any point along their course; and all nerves of sensation are liable to have their sensibility so aggra-

* Practical Views on Nervous Diseases.

vated as to give rise to acute suffering. A little consideration will show that it is this class of nerves only that can possibly be the seat of pain.

The nerves of sensation and motion are not less distinctly marked by the functions they exercise,—the one imparting the properties of motion, and the other of sensibility, than they are by their origin and the mode of their termination in the various tissues. The one, whether distributed to the voluntary or involuntary muscles, or to any fibres endowed with contractility, are exclusively the media for the transmission of the nervous principle, in virtue of which all the phenomena of contraction take place. The other class of nerves gives to the five senses the power of receiving their appropriate impressions: and they likewise confer, in very different degrees, on every molecule of living matter, the property of sensibility. This class of nerves, for the performance of their functions, is equally dependent on the same pervading principle. The difference in the effects resulting from its operations, in the two cases, *is to be ascribed to a difference in the origin and structural associations of the nerves.*

One part of the brain is destined to receive impressions from without, — from all sensitive nerves :— another is in relation to the nerves of motion, and whether the phenomena of contractility result from voluntary or involuntary action, the two classes of nerves are in direct connexion with one of these cerebral regions. The termination or origin of the nerves in the spinal cord, does not affect the justness of this view, as the nervous masses of which it is

composed may be regarded as the continuation or prolongation of such portions of the brain.

LXXII. Agreeably to this mode of contemplating the nervous system, it is evident that a nerve of motion is incapable of exciting pain, the cerebral matter in which it terminates not taking cognizance of impressions received from without. This is the medium for the transmission of an influence frequently awakened by the sensitive nerves, as well as for facilitating the conveyance of it during every moment of existence to the organs endowed with the properties of contractility. The nerves of motion are variously modified in their conditions. They are not always animated by the same *amount* of nervous power, which may arise from constitutional debility, cerebral disorder, or from causes disturbing the functions of the parts to which they are distributed; and hence palsy, weakness of the muscles, and the involuntary movements of the body in chorea, and other diseases.

Similar changes are observed in the nerves of sensation. At one time they altogether fail to excite the phenomena of sensibility; at another, this is increased to a marvellous extent, and it may be shown from corresponding alterations in the *quantity* of the nervous principle pervading them. No writer previously has ever attempted to explain the cause of these extraordinary modifications; nor could the prevailing physiological doctrines suggest in any degree a rational hypothesis on the subject.

The natural, as well as the inordinate sensibility of every part of the body, IS ACCORDING TO THE AMOUNT

OF THE NERVOUS PRINCIPLE EXISTING IN IT, always supposing the mind to be equally capable of being affected. To augment this amount, is proportionately to modify the sensibility, because it is creating enlarged relations to that portion of the cerebrum which alone takes cognizance of impressions.

Let us imagine, in order to illustrate our meaning, that the ramifications of the fifth pair of nerves, distributed to the face, have, in the state of health, an amount of the nervous energy which may be estimated as 1. This clearly will imply a certain definite relation between the brain and these ramifications. If these, however, from any cause, as cold, injury, or local sources of irritation, acquire a quantity which is to be measured by 3, we have then obviously new relations established between the cerebrum and its sensitive nerves, and the invariable consequence is, greatly increased sensibility.

The concentration of the animating principle in these nerves, *is multiplying the surface to be acted upon by external causes*,—it is giving to the nerves an increased quantity of that power, in virtue of which they excite impressions in the brain. Is it possible to conceive that they possess no pervading agent, when we observe that all substances, whether organic or inorganic, have some principle in common, by which, under peculiar circumstances, they exhibit a variety of phenomena or conditions? In many it appears latent, but in general it is capable of being aroused to the manifestation of its existence. Is it, therefore, reasonable to suppose that the nerves are unprovided with a principle emanating from the

nervous centres, and flowing in the direction of all organs according to their regular or greatly increased actions? If this be admitted, the difficulties which are universally acknowledged to embarrass the inquirer, in every attempt to account for the frequent modifications of both motory and sensitive nerves, allow of an easy and philosophical solution.

LXXIII. This investigation is not simply interesting from the speculative considerations which it presents, but from the practical applications to which it leads. It is on these grounds that it is alone urged on the attention of the mind. The truths which it establishes are necessary to the elucidation of the causes and nature not only of nervous, but of all diseases; and equally valuable is the light which they elicit in regard to the judicious and efficient treatment of them. It would not be less absurd to endeavour to explain the phenomena of the circulation, leaving out of view the vital current distributed through its myriads of vessels to all parts of the body, than to attempt to account for the changes in the properties of the nervous system, independently of an agent animating every molecule of organized matter.

When we reflect that the animal economy, and all its deviations from health, have hitherto been studied without reference to a principle susceptible of accumulation and dispersion, or which is constantly modified in its conditions,—at one time imparting an exalted degree of sensibility, thrilling the nerves with an indescribable pleasure; at another rendering them the media of the most poignant sufferings; it is easy to appreciate one of the important causes of the prevail-

ing ignorance of the origin and nature of diseases, as well as the absence of all established and philosophical methods of cure. Inquiries of this kind will be considered by many as exceedingly refined, as if truth, when accurately seized, can ever be too refined to be justly applied to the explanation and correction of the morbid states of the body. The more exquisite the analysis, the greater is the insight we get into the operations of nature. The frequent remarks in respect of what is *practical*, almost invariably imply, in the healing art, the employment of active remedial measures producing an obvious result; but often with no accompanying comprehensive view of the mode of their operation, or of the influences which they awaken in the animal system, without a knowledge of which the efforts of the practitioner are, at best, merely ingenious guesses concerning the conditions of the vital powers.

LXXIV. We will now make a few observations on the painful affections of nerves, which in this climate, from its extremely variable character, are of frequent occurrence. In different regions of the body they are variously designated. But in all situations they are characterized by the same predominant symptoms; and with few, if any well grounded exceptions, demand the same general treatment. All sensitive nerves, whatever be the office of the organ with which they are associated, are liable to be so affected as to become the seat of acute pain. The nerves of the face are very often attacked, and one particular form of the disease, is familiarly known as

tic douloureux: toothache is another manifestation. A disturbance of the intercostal nerves has received the name of *pleurodynia;* of the great sciatic nerve, *sciatica;* indeed the heart, the stomach, the liver, the kidneys and the bowels, as well as every muscle of the body, may be the seat of neuralgia, or a painful state of their respective nerves.

Pathologists have laboured to establish a distinction between such affections and rheumatism. The former are described as peculiarly acute, characterized by darting and intensely lancinating sensations, intermittent or remittent in their seizure. In rheumatism, the pains are less distressing, and less variable in their character. These are a few of the phenomena by which each is distinguished. These diseases may however be defined with much greater precision. Rheumatism is equally a *nervous* affection, and is most promptly cured by those remedies which directly influence nervous matter. It almost invariably arises from exposure to currents of air after previous exertion, or from atmospheric changes, attacking the nerves AT THEIR PERIPHERAL EXTREMITIES OVER A MORE OR LESS EXTENSIVE SURFACE. It is not the trunk of one nerve only which is disordered in its functions, but a multitude of nervous cords. And though the sensitive nerves are the first to receive the morbid impressions, yet from the great number which receive the baneful influence, the motory nerves are subsequently involved in the derangement, and hence the inability to move the affected limb, or the acute suffering which attends the effort.

In neuralgic affections, as *tic douloureux* and *sciatica*, and numerous other examples might be given, the abnormal action is generally confined to the trunk of one nerve, or its branches, within a limited space; it is, therefore, easy on this view to account for the particular symptoms which it excites, as the darting, throbbing, and lancinating pains, as well as for its intermittent and remittent phenomena. This particular form of disease may be occasioned by atmospheric vicissitudes,—by exposure to currents of air, as in the case of rheumatism; and indeed it is often to be traced to such causes; but perhaps, not less frequently does it arise from a disordered condition of the nerve at its connexion with the brain or spinal marrow; or from some source of irritation existing at or near its peripheral extremity. It will, therefore, be variable in its manifestations. At one moment, the pains will instantaneously cease, or as suddenly be renewed; or will be so modified in degree, that even acute suffering, from a diminution of its intensity, is felt as comparative comfort.

The change in these instances, depending less on any alteration occurring in the course of the nerve, than at either extremity of it, especially the cerebral extremity, it is evident that whatever aggravates or relieves the source of the local action, will at once give rise to corresponding phenomena.

There are other considerations connected with the analysis of tic douloureux, toothache, and other nervous affections, which establish a wide distinction between these and rheumatism, and tend to elucidate the nature of both. All diseases, whatever

may be their character, or the tissues which they attack, must necessarily more or less influence the condition of the nervous centres, and in general will awaken painful impressions: if these give rise to acute suffering, the brain enters into intimate and comprehensive relations with the disordered structure, whether near or remotely situated. The sympathy, which is thus excited, is a circumstance of great importance, and has not hitherto been clearly apprehended. The more extensive the relations become, the greater is the reciprocal action which takes place between the cerebrum and the diseased organ, by which is to be understood the uninterrupted play between the two, the one arouses painful impressions, and the other from taking cognizance of them, *greatly increases the amount of the animating principle in the nerves by which these conditions are maintained.* The suffering which is induced is in proportion to the largeness of these relations.

This mode of analyzing the subject establishes a further distinction between neuralgic affections and rheumatism. In the former, as in the intensely painful affections of the face, the nerves and the brain are constantly re-acting on each other, the inevitable effect of which is an augmentation in the nervous current associating the two, the resulting phenomena being regarded as sympathetic. The sympathy, as here explained, is not a mysterious and indefinable power, — a something better calculated to exercise the imagination than the judgment, BUT A MODIFICATION IN THE CONDITION OF A PHYSICAL AGENT,

—A PRINCIPLE WHICH MAY BE ACCUMULATED OR DISPERSED.

Rheumatism, when it exists in an acute form, establishes the same extensive relations with the brain, and hence the excruciating suffering on the slightest motion, and even at the contemplation of it. Under these circumstances the ENTIRE of the nervous system is involved in the morbid action, and to the influence which it exerts, is to be ascribed the variety of symptoms which are regarded as inflammatory, such as the buffy condition of the blood when drawn, the quick, full and bounding pulse, the increase in the generation of heat, the flushed countenance, and the severity of the existing pain. No writer has yet attempted to explain the source of these diversified effects, and consequently they have yet to learn the real nature of rheumatism, as well as its appropriate treatment,—an inquiry on which we hope at no distant date to enter, when we shall endeavour to elucidate the disease from its origin throughout its subsequent stages, and we trust, not altogether unsuccessfully, to account for the widely interesting phenomena which fall under observation. Every step of the investigation will be practical.

LXXV. It is much disputed by pathologists whether neuralgic affections be inflammatory or not. The highest authorities consider the greater part of them as nervous, depending on a peculiar condition of the nerves, but not at all inflammatory in its character. Occasionally they are the seat of inflammation, by which is implied such a morbid action as tends obviously to modify their structure. Writers, who

treat them as nervous, have thrown no light on the causes of the different symptoms. They have been ascribed to congestion, or a diseased action in that part of the brain in which the nerves are implanted, and to various external sources of irritation. But why these causes, even supposing them to exist, should be capable of conferring upon the nerves implicated, an extraordinary degree of sensibility, embittering and destroying existence, is a phenomenon which no one has in any measure attempted to explain.

An admirable writer has observed, in treating of *facial neuralgia*, "That it is more easy to say what this affection is not, than what it is. It is not, as M. Berard has remarked, acute neuritis, nor chronic inflammation, nor any structural change of the nerve; and, although various lesions have been detected in connection with this affection, these have rarely been observed in the nerve itself, and are neither so constant in occurrence, nor so uniform in character, as to account for it."*

The phenomena of neuralgia are, nevertheless, explicable on the principles here partially developed. Whatever modifies the *amount* of the nervous principle pervading the sensitive nerves, will in the same exact ratio disturb their normal sensibility. To increase the amount, is proportionately to augment the capacity of the nerves to receive and convey impressions to the brain: to diminish it, is to produce opposite conditions.

* A Dictionary of Practical Medicine by James Copland, Part IX., p. 877.

This view of the subject is full of practical applications. As we can change the circulation in a given part of the body from acting upon other regions, so we can alter, and often with greater facility the distribution of the nervous energy in one nerve or class of nerves from a knowledge of the laws regulating its action ; the study of which gives to the mind a comprehensive survey of the operations of life, and multiplies and refines the means at our command to arrest or controul the frequent deviations from health.

The history of neuralgic affections will not unfrequently throw a flood of light on their origin, nature, and appropriate treatment. The attention is too often concentrated on the local symptoms, and the remedies employed have far too generally had a reference to them, or have not been so selected as to secure the advantages which they are capable of conferring. Even where constitutional debility is imagined to be the cause of the particular suffering, stimulants, tonics and antispasmodics are often prescribed with very little judgment. The animal system has its peculiar organic necessities, and it is as difficult to hit upon a remedy accurately corresponding to them, both in quantity and quality, as it is to recommend an article of food that shall, at once, be agreeable to the palate and grateful to the stomach. The disturbed balance of the vital powers demands much more elaborate considerations than they ordinarily receive. Because they are weak it is no just reason that we shall attempt to invigorate them by active means. Their weakness would suggest the

propriety of proceeding with great caution, proportioning the remedies to the prevailing deficiency of vital tone. The treatment of no class of diseases is usually so tedious and unsatisfactory as that of neuralgic affections. Pathological researches have hitherto thrown little light upon their nature; nor has the existing knowledge of the functions of life been sufficiently comprehensive to enable the mind to study them in their extensive relations to these functions; consequently the resources by which they are to be combated have been imperfectly appreciated. Were they understood in all their simplicity and fruitfulness of application, the direct and easy path to a successful issue would often be found in the employment of measures, which gradually enlisted into co-operation the whole system in the effort to correct its morbid deviations.

LXXVI. The class of persons most susceptible of neuralgic affections, and the period of life at which they are most frequently observed, as well as the consideration of the circumstances which predispose to or excite them, may be shown to favour the principles here laid down in reference to their nature. They are the most liable to occur in those of a nervous or melancholic temperament, in whom the nervous system is peculiarly alive to impressions, and equally prone to derangement. Its powers are delicately poised, and are readily disturbed by anxiety, undue exertion of mind or body, by the vicissitudes of the seasons or atmospheric changes, by excesses in the indulgence of the passions, by an

injudicious mode of living, and especially in the weaker sex, by the temporary or permanent cessation of important functions.

The tendency of all these causes is to depress, either locally or generally, the nervous system. In the majority of instances a constitutional debility is induced, creating such a morbid condition that the slightest imaginable circumstance, as an almost inappreciable atmospheric alternation, a transient perturbation of the feelings, a trifling degree of fatigue, a restless night, or indiscretion in diet, is sufficient to disorder the functions of particular nerves. The *external* impressions which these receive, interrupt the ordinary relations between them and the brain, the effect of which is an immediate re-action between the two, by which the susceptibility of both to exalted impressions is greatly increased. An augmented nervous current multiplies these relations. Where the disturbing causes are *internal,* whether referable to the influence of mind or body, a similar change takes place in the nerves, and corresponding sympathies are awakened. It seems to be a law of the animal system, that, within certain comprehensive limits, any circumstance tending to depress or injure the vital energies, is immediately followed by re-action of the part directly affected, or by the manifestation of phenomena in some other region unequivocally indicating the broken balance of the powers of life.

As an illustration of the mode in which different portions of the nervous system acquire an extraor-

dinary degree of sensibility, we will endeavour to trace the origin of those changes in the semilunar ganglion, which in various forms of dyspepsia, are accompanied by acute suffering. The smallest amount of food, or pressure at the pit of the stomach, will occasionally give rise to intense pain. The ganglion and its numerous nerves, from improper ingesta, either inordinately exciting or unduly tasking the powers of the digestive organs, or from grossly sensual excesses, become the seat of what is designated irritation, by *which is here implied an augmented vascularity, and an increased concentration of nervous energy.* The two are almost necessarily conjoined. When the first stage of the exalted sensibility is established, the ganglion and its various associated cords become a *centre* of irritation, and by an inevitable law of the animal economy, they draw to them from the neighbouring and connected nerves, further supplies of the nervous principle, each addition of which is an augmentation of sensibility; until, at length, from this point, a prejudicial influence radiates in all directions, but especially to the viscera already implicated in the derangement, imparting to the nerves within the sphere of its agency, a proportionately increased amount of that principle which aggravates the existing sensibility.

The brain and these different nerves re-act on each other, arousing a wide class of sympathies; and among the most prominent, is an irritability of temper which displays itself in a thousand forms. Everything ruffles the finely-strung nerves. A word

or look agitates the frame. The mind is all vigilance, anxiety and suspicion. A tremulous motion plays along the muscles of the countenance, the expression of which painfully pourtrays the character of the disease. The sleep is short, often broken, or difficult to induce from the prevailing wakefulness. Mental hallucinations, incoherent ideas or insanity, are not unusual manifestations of the sympathy excited by the disordered conditions of the digestive organs.

Our business, however, on this occasion is to account for the increased sensibility of nerves. The illustration which is here given, will, with slight and immaterial modifications, apply to neuralgic affections in general. They are characterized by the same nervous changes whatever may be the seat or nature of the exciting causes.

LXXVII. At no period of life are these affections so frequent or distressing, as in the female, at or immediately after the cessation of the uterine functions. Their occurrence is in exquisite harmony with these views. It is, at this time, that the nervous system has to adapt itself to new conditions,—to widely different relations. A large and important organ,—an organ, which, at certain intervals, has awakened every fibre of the body to invigorated duties, or subjected it to its influence, ceases to make any further demands on the blood and nervous energy. Where the constitution is delicate, the adjustment of the vital powers is often a protracted and unsuccessful struggle.
the effort to establish fresh relations, every species of morbid action is occasionally excited; but especially

nervous diseases, in which is to be comprehended every abnormal manifestation of the nervous system.

At puberty, in the female, neuralgic affections are, also, of frequent occurrence, and they are equally explicable on the same principles. The animal system previously has been chiefly engaged in building up its material elements,—in completing its structure preparatory to a new state of being,—to a much wider world of feeling and of action. That which is destined to impart fresh life and energy to all parts of the body, is the uterus. The beginning of its functions, when circumstances are unfavourable to the development of its resources, creates conditions in some degree analogous to those which we have considered. Nature again is making an effort to establish new relations, and a corresponding struggle ensues, modified in its effects *by the difference in the state of the vital powers at these two periods*,—a difference which it is important to analyze in the treatment of nervous affections.

Did it lie within the scope of this inquiry to examine elaborately the vital conditions, in connexion with the modifications of the uterine functions, at the commencement and decline of them; or to expatiate on the influence which these functions exert on the entire animal economy, many just and comprehensive views might be suggested, in harmony with the existing vital conditions, in reference to the correction of the diseases with which they are associated. In many respects very different measures are required. In one case, we have nature waiting, though often imperfectly prepared,

to be aroused into action; in the other, she is contracting the sphere of her operations, and proportionately their activity. In both instances, however, *there is a struggle to conform to a fresh adjustment of the energies of life*, and according to the facility with which this is accomplished, is the subsequent well-being of the animal system.

The difficulty which is occasionally experienced at puberty, is displayed by a variety of nervous phenomena, as hysteria, epilepsy, vitiated tastes, irregular muscular motions, catalepsy, somnambulism, derangement of the nutritive functions, painful affections of the nerves, and not unfrequently, consumption. These diseases are far more under the controul of art than is generally imagined, or shown by the success of the remedial measures enforced in the treatment of them. The powers of the animal system, externally as well as internally, are instruments on which and by which, if judiciously influenced, important changes may readily be produced in the whole of the vital conditions. Few are sufficiently sensible of the vast field which is open to their operations, or of the resources which a knowledge of the functions of life places at their command. The too common practice of drugging the body with copious draughts of ill-assorted compounds, in the hope that if one ingredient misses, another will hit the mark, and leaving them unaided to effect the desired object, presents no flattering picture of the existing state of medical science.

The means employed often exhaust or embarrass the vital energies, which it should be the aim to

economize and enlist into our service, as furnishing the most efficient co-operation. The shrewd expedient of the celebrated engineer, Brindley, of finishing limited portions of his extended canal, and making them subservient to the completion of the rest, should ever be the guide of our conduct in the endeavour to restore the natural functions of the animal system. We should take a comprehensive survey of the vital phenomena that lie before us,—study their relations, and as far as possible ascend to the sources of them, so that we may see clearly the nature of the difficulties which have to be overcome. It is in this way only that we can arrive at a commanding position, and by acting on the vital energies, though indirectly on the existing disease, we may so far influence them as to gain an important step, and thereby establish a larger basis for the application of further measures.

LXXVIII. In the treatment of neuralgic and nervous affections, occurring after the prime of life, much is to be accomplished by a proper mode of living. The unfortunate sufferers, from a fear of aggravating their pains, are usually far too abstemious both in regard to food and stimulants. The former is not sufficiently substantial, nor is the latter taken in the required quantity. We have already remarked, that these affections, almost as a rule, originate in the debility of the nervous system, to remove which, or to impart to the system an energy sufficient to enable it to perform its duties, the diet must be as generous as the vital conditions will permit.

We have seen numerous cases characterized by acute pain, seated in different nerves, and accompanied with almost perfect wakefulness for nights in succession, which no remedies had the power of subduing, or materially alleviating, permanently cured by inducing the patient to take food on retiring to rest, and afterwards half a tumbler of hot port-wine negus, or whisky and water, or a glass of malt liquor. Whisky is immeasurably superior to brandy in its beneficial effects on the system.

In a recent treatise, of considerable merit, wakefulness is treated of, which is often an extremely distressing symptom, and the frequent accompaniment of many forms of nervous disturbance, and yet the writer never once alludes to the important relations between the stomach and the brain,—relations, a knowledge of which, and of the influence which the one is capable of exerting upon the other, is essentially necessary to throw any practical light upon the subject. In an immense number of instances in which this symptom is predominant, opiates in all combinations and doses, as well as the whole class of anodynes, are not only inefficient in procuring sleep, but generally greatly aggravate the existing wakefulness. We speak from personal observation and experience, as well as on the testimony of others. If the end be attained, the sleep, under these circumstances, is neither sound nor refreshing; and the patient, so far from awaking with renewed vigour in the morning, is depressed, languid, and irritable.

The wakefulness is not simply a peculiar condition

of the brain, BUT OF THE WHOLE NERVOUS SYSTEM. It is merely one of the manifestations of this condition; and hence the treatment must not have a reference to one part of this system, but to the whole of it. The study of the relations between the brain and the digestive organs, will point out the mode in which the former may frequently be beneficially influenced, as well as explain the manner in which the good is accomplished. The remarks on this head apply as directly to neuralgic affections, as to other states of the nervous system.

The stomach and the brain are the seat of important vital operations, which in the highest state of their activity, must be *successively* and not simultaneously carried on. Nature will not allow of two predominant actions at the same time. The reason is obvious. The mental faculties are as dependent on the nervous principle pervading their respective organs, as the stomach or any other part of the body. If they are powerfully called into play by deep and concentrated thought, it is invariably at the expense of the animal system at large.

If the digestive apparatus is excited to the performance of its functions, it equally makes a demand on the entire animal economy. It draws its supplies from the brain and the different nervous centres, and in proportion to the amount which it attracts to itself, relatively to the existing vital energy, is the languor or debility induced. The nervous principle and the blood constitute the nature of these supplies. If the accuracy of this explanation be questioned, we have abundant evidence of its correctness in the

results which fall under observation. If the repast has been substantial, there is a tendency to sleep, or the intellect is indisposed to apply its energies to any pursuit requiring consecutive thought: there is no inclination to take active exercise, or if inordinate demands be made on the mind or body, consequences frequently follow which establish the truthfulness of these remarks.

Wakefulness, though it may depend on the weak or exhausted state of the nervous system, is not, when philosophically analyzed, the direct result of cerebral debility, or in other words, does not arise from the feeble, but the greatly excited action of the brain, by which is to be understood, THE CONCENTRATION OF AN UNDUE AMOUNT OF THE NERVOUS PRINCIPLE, and hence the ungovernable activity of the mental faculties. The object of the practitioner is to allay this activity, and in the attempt to effect it, he tries occasionally the whole class of narcotics, and often with only partial success. Sometimes he altogether fails. If wakefulness is to be traced to the undue concentration of the nervous energy, and numerous facts might be adduced in corroboration of the doctrine, there are other modes in which this condition may be diminished, and as a consequence, the excited action of the brain. One of these, and among the most efficient, is to give the stomach something to do,—to exercise its functions. The inevitable effect of which is, to draw upon the resources of the brain, and in proportion as these are abstracted by the process of digestion, in the same ratio does sleep gradually steal upon the wearied eyelids.

We cannot afford space to expatiate on the practical value of these views, or to illustrate at length their application.

LXXIX. The foregoing remarks on the properties of the nervous system, and the manner in which it is influenced by a variety of external and internal causes, will apply, with undiminished force, to the next subject of inquiry, viz., the origin and nature of cramps or spasms. They are, as already observed, of frequent occurrence in the female, at and subsequent to the change of life. The fingers, the hands, and the muscles of the calves of the legs, are most liable to be affected; and next, those of the neck and back. The seizure and its cessation are often equally instantaneous. The parts which are subject to these attacks not unfrequently become rigid or incapable of motion.

Spasms are excited by over bodily exertion, as dancing, walking, or long-continued muscular exertion of any kind; by wounds and atmospheric vicissitudes, and occasionally by food difficult of digestion. We once witnessed a case of the latter description, in which the entire muscles of the body were thrown into convulsive movements. The person had just recovered from a severe illness, and whilst exceedingly weak had eaten heartily of beef steak. The appalling violence of the symptoms occurred in about half an hour after the repast, and as the cause was not suspected, various remedies were employed. At length the efforts of nature rejected the contents of the stomach, and then it was found that the patient had taken not only what

was improper, but had *bolted* her food without mastication.

In the foregoing observations it is shown that neuralgic affections originate in the sensitive nerves, the motory being subsequently attacked. In cramps or spasms, it is the latter which are probably first seized, or at least we have no evidence of the sensitive nerves receiving the first morbid impressions. As previously remarked, both classes of nerves are pervaded by the same animating agent, and the difference in the phenomena, consequent on its disturbance, is in perfect harmony with the functions which each performs. To modify the nervous current in the one class, is to affect proportionately the sensibility of the nerves, to increase, diminish, or altogether to destroy it: to disorder its distribution in the motory nerves, will often convert voluntary into involuntary movements, excite irregular motions, paralyze or render rigid the muscles; conditions which are alone explicable on the existence of a nervous energy, and its susceptibility of being influenced by a variety of causes. Whatever be the nature of these, they produce their respective effects by modifying *the distribution of the nervous energy*.

These views are not simply interesting from affording an easy explanation of phenomena which have, hitherto, in no degree, been accounted for;—they are rich in practical applications. Is it not evident, that in many of the most severe cases of spasmodic rigidity, the remedies should be less immediately applied to the parts affected, than to other regions

of the system, by arousing the nervous properties of which, we may re-establish the natural functions of the contracted muscles? The most powerful measures will usually be the indirect and not the direct. The whole animal system is open to our influence, and if judiciously acted upon, we may not only succeed in inducing relaxation of the muscles, but may, in numerous cases, by imparting additional tone to the muscular system generally, prevent the recurrence of cramps or spasms. Few severe diseases are, in our opinion, more under the controul of art, if enforced according to the suggestions of just and enlarged physiological views. We may again observe, that the light by which we are to be guided, can be attained only by a thorough understanding of the relations by which all parts of the animal economy are associated,—by a knowledge of their exact dependence on each other. The contemplation of the organic instruments of life, in these different phases, will place within the command of the practitioner extraordinary resources, —will enable him to distinguish between the important and the subordinate causes co-operating in the production of vital phenomena. The microscopic understanding may be usefully employed in detecting minute changes; but where the field to be examined is extensive, and abounds in interesting objects and diversified appearances, running or blending into one grand whole;—to appreciate these and their relations,—to determine their precise value, requires the far-seeing power of the telescopic mind. The animal system is this varied and comprehensive

picture, modified in its outline, in its lights and shadows, by every form of disease.

LXXX. It is not difficult to explain, according to these principles, the occurrence of spasms after undue exertion; or in those instances in which they are to be traced to constitutional debility, or particular functional derangement. Violent exercise, such as dancing, expends the nervous energy of the muscles brought inordinately into play,—*it disturbs the balance between their respective nerves and the rest of the nervous system.* In the succeeding period of repose, the struggle ensues to re-establish the broken balance, and it is, at this time, that the painful spasmodic actions take place. The sudden transition from vigorous muscular motion to perfect rest, is the cause of the phenomena. These may almost invariably be prevented by friction with the hand steadily applied to the lower extremities, or by immersing them in warm water. The mode in which these means act, corroborates the justness of these views. The friction excites the circulation of the limbs,—opposes its tendency to become feeble, which is the natural effect of over exertion. The blood cannot possibly be aroused to increased motion, without, at the same moment, augmenting the flow of the nervous energy, and thus the nerves by a gradual, and not abrupt transition, pass into the state of inactivity.

The immersion of the limbs in water produces the same general effects. It influences the circulation in the same manner, and consequently the functions of the several nerves directly acted upon.

The cramps or spasms which occur after the prime

of life, associated more or less with constitutional debility, are frequently to be traced to the disordered actions of the stomach. In regarding this, or any other organ in the light of an exciting cause, we must not lose sight of the general nervous conditions which prevail; without which, the stomach would be unequal to the production of the painful effects. Such conditions existing, a comparatively unimportant circumstance will be capable of giving rise to a wide class of phenomena. Save the brain, the stomach has the most extensive relations with the animal economy, and its influence is proportionately great. The whole body readily sympathises with its varying states. If inadequately supplied with food, or food not of a sufficiently stimulating character, it becomes weak, its functions languish, and in the same degree, all other parts of the system, AND SOMEWHAT IN THE RATIO OF THEIR DISTANCE FROM THE STOMACH AND THE NERVOUS CENTRES. Hence the feet and the hands are the first to become cold, or to be permanently so in delicate constitutions; and from the same general law, the lower extremities and the fingers are more frequently attacked with cramps than other regions of the body. The manifestations of the law may be modified by circumstances which it is here unnecessary to consider. It will not be doubted that the circulation becomes more feeble as it recedes from the heart. When the blood has passed from the larger arteries into the minute capillaries, its subsequent motion depends on the action of these vessels, and the vital operations in which they are engaged. It may,

with some appearance of plausibility, be urged that this illustration does not apply to the nerves, as the principle by which they are pervaded is not propelled from a particular centre, as the blood. This is perfectly correct. It is not transmitted through its myriads of unseen channels by the constant operation of such a cause. But both are similarly influenced in one respect: THEY ARE DRAWN TO ALL ORGANS ACCORDING TO THE VITAL ACTIONS OF WHICH THESE ARE THE SEAT. It is these actions which regulate the distribution of them.

It may further be remarked, that whatever enfeebles the circulation in any region proportionately weakens the action of the nerves, so that independently of the foregoing reasoning it necessarily follows, that where the motion of the blood is relatively exceedingly slow, in consequence of its distance from the heart and the limited functions which it performs, the nervous principle will be equally circumscribed in its amount, and hence peculiarly liable to be disturbed in its distribution.

The observations made in the preceding pages in reference to the importance of attention to food and stimulants, in the treatment of numerous cases of neuralgia, apply with greater force to the diseases we are now considering. And the views, which were developed in analyzing the preventive means of consumption, bear especially on both these classes of nervous affections. One remedy may be more efficacious in its application to one particular disease, than to another; *but in all the deviations from health, how varied soever they may be, there are certain*

general physiological principles that may be made subservient in the treatment of them.

To ascertain these and apply them with judgment should be the aim of the healing art. To give efficiency to its exercise it is requisite to possess a comprehensive knowledge of the nature of the morbid actions,—the sources whence they spring, and the mode of their production. The most valuable remedial measures will often be found to lie out of the domain of purely medicinal agents.

LXXXI. In the foregoing observations the object has been to explain the origin and nature of the particular diseases brought under notice. We have endeavoured to show that the proximate cause is a disturbance of the animating principle of the nervous system; and on this view only is it possible to solve the difficulties involved in the analysis of them. Taking further into account the important fact, that the motion and properties of the blood are, also, necessarily disordered in all such morbid conditions, it is clear that the remedial measures, to be just and comprehensive in their character, must be based on a thorough knowledge of their vital functions, especially a knowledge of the nervous and circulatory powers. To be able to trace these in their various relations and associations, cannot fail to suggest such treatment as shall be equal to the exigencies of the case. And this, as already remarked, will frequently depend less on the efficacy of medicinal agents, than on the judicious employment of other means, as diet, in the consideration of which is included, wine, stimulants generally,

and malt liquor; or it may be the withdrawal of these, according to the prevailing character of the constitution, and the nature of the existing symptoms. The regulation of the ingesta places at our command resources, the value of which has yet to be satisfactorily ascertained. Exercise, in all its modifications, has the next claim on our attention. The legitimate enforcement of it must obviously vary with the age, the disease and the habits of the individual. There is one rule, however, that may be laid down in reference to it, viz., that it should never be allowed to border on fatigue.

The next remedy to which we advert, not less efficient in its effects than carefully adjusted diet and exercise, is friction with the hand or the application of the flesh-brush, particularly along the spinal marrow and over the abdomen. We have seen the persevering use of this practice attended with extraordinary beneficial results. One consequence, which almost invariably flows from it, *is that it establishes the natural functions of the bowels.* How obstinate soever they may be it gradually corrects the inactive condition; and if indeed they are too relaxed from weakness, whether from constitutional or other causes, it is scarcely less efficacious in the removal of the symptom. There is no mystery in the manner in which it operates. A knowledge of the laws of the vital powers enables us to trace its influence with perfect ease.

Before proceeding to analyze this influence, let us endeavour to point out the general causes of constipation, or the contrary state of the bowels

which frequently characterizes a variety of nervous phenomena, whether manifested in the form of cramps or spasms, or painful affections of the nerves. Constipation, in these cases, is mostly to be referred to a deficiency of vitality in the alimentary canal and the organs co-operating in the process of digestion. Whether they be organs of secretion, or exercising muscular contractility, they are similarly circumstanced. The stomach, the liver, the pancreas, and the bowels, have not the required tone for the performance of their different offices. And it must be remembered that this is not a morbid state which belongs to the nerves only; the circulatory system, in connexion with these organs, is extensively involved in the derangement. There is not simply a diminution in the amount of nervous power necessary to excite the viscera to the discharge of their duties, the blood has likewise become stagnant in them, and is proportionably destitute of its ordinary stimulating properties. These two conditions almost always co-exist.

A constitutional tendency in the bowels to relaxation, or a relaxation readily produced by trifling circumstances, is always an unfavourable symptom. It is evidence of weakness in the system generally, and may be emphatically described as indicating a want of *tone*. The contrary condition, constipation, is often embarrassing from its obstinacy, in the healthiest, the most vigorous and active, and in whom there is a peculiar *wiriness* of frame,—a capability of undergoing great fatigue.

The relaxation of the bowels when it cannot be

satisfactorily traced to structural changes, but to functional derangement originating in or associated more or less with constitutional debility, arises generally from the existence of irritation. The nerves are too easily excited, and hence the blood is apt to flow towards the viscera in undue quantity, aggravating still further the already disordered capillary circulation.

We will now return to the consideration of the influence which friction with the hand or flesh-brush exerts in the removal of constipation. It rouses both the nervous and circulatory systems. It tends to equalize the distribution of the energy of the one, and the vital fluid of the other; and consequently from the alterations which it induces in these important systems, places the greater part of the digestive apparatus in circumstances favourable to the exercise of its functions. The benefit rests not here. It is an advantage in which the whole animal economy participates, not merely from the relief which is given to the bowels. The more equable distribution of the blood and nervous principle, is a change which is felt by every fibre of the body. Wherever it occurs a grateful influence is imparted to the powers of life generally. The good which results far exceeds what might be anticipated from so simple an application.

In those conditions of the bowels characterizing their too frequent action, the employment of the same means will be attended with the same beneficial consequences. And we could relate instances in which the practice has been carried on for months with ex-

traordinary advantage to the entire animal economy. The friction should not be restricted to the parts named; although certainly claiming the first attention. The whole surface of the body should be subjected to its operation.

LXXXII. The physiological principles which are here laid down in reference to these particular symptoms, have an intimate relation to those conditions of the animal system which give rise to cramps, spasms, aud neuralgic affections. These diseases are generally accompanied with the disordered functions of the bowels, which are not unfrequently the exciting causes, or the occasion of their long continuance or aggravation.

The shower bath is also another means of great efficacy. It is often, however, injudiciously used. It is sometimes enforced, when, from the state of the vital powers, it rather depresses than invigorates them. In order that it may produce the amount of good of which it is capable, it should follow those measures which have corrected previously existing derangements,—when indeed considerable vital energy is prepared to be roused into action. It is then that it exercises a peculiarly renovating influence.

There are no particular precautions necessary to be observed in the employment of friction. It is never fraught with danger, and may, in a variety of cases, far more numerous than have been indicated in these pages, be prescribed with unquestionable benefit.

CHAPTER V.

THE ORIGIN AND NATURE OF SCROFULA.

LXXXIII. THERE are few diseases possessing greater interest to the medical inquirer, than scrofula. Its prevalence, and the variety of forms under which it presents itself, give it a strong claim on his attention. Nor has the study of it by any means been neglected. Numerous and elaborate treatises have been written, either to explain its nature, or to point out its most efficient treatment. It is scarcely necessary, however, to observe, that no two authorities, who think for themselves, are at all agreed on these important subjects. By one it is stated, that "from all this we have a clear proof that king's-evil is a disease of debility, operating by a specific influence on the *circulating*, and particularly on the *lymphatic* system. Whether this influence is the result of a specific matter is by no means so clear; however common the opinion. It is also a general belief that this specific matter is from the first a specific irritant or acrimony. But this at least is a mistake: for the disease is accompanied throughout with diminished, instead of with increased irritability; and hence the power of producing it must be of a sedative rather than of an exciting or acuating quality. And it is in this diminution of irritability that scrofula differs from all

other atonic diseases, since the debility and the irritability generally augment in like proportion, and maintain an equal march. Dr. Parr ascribes the scrophulous diathesis to a redundancy of albumen at this period, (early life) together with an excess of oxygen and a deficiency of azote, evidenced by the florid hue of the countenance."* What the nature of the debility is, or how it originates, or how the disease gradually extends until it involves the entire body, we are not satisfactorily informed.

One of the latest writers on scrofula, and regarded as the first authority, is Lugol, whose work, from its imagined excellence has been translated by Dr. Ranking. Lugol has certainly enjoyed favourable opportunities for the investigation of the disease. His connexion with a large hospital and apparently an extensive private practice, have furnished him with unusual facilities for pursuing his pathological researches. What assiduity, or devoted attention to these researches, with ordinary powers of mind, can effect, he has accomplished. It may, however, without any reservation be asserted, that there is no treatise on the subject more open to objections, or less distinguished by a clear and philosophical spirit than this production. It exhibits throughout an extremely limited acquaintance with the functions of life, and is certainly disfigured by most erroneous physiological views. Some of these we shall presume to analyze.

This writer observes, "The question will probably be asked,—What is this scrofulous taint? We shall

* Mason Good, Opus cit. Vol. II. p. 793.

not attempt to reply to the question so propounded, for the reason *that it does not admit of a satisfactory solution*. We can only affirm that the existence of the taint, whatever it may be, is congenital; and that it is invariably revealed by the development of tubercles, a production which is, in fact, the very essence of scrofula."*

Thus it appears that an inquirer who has been engaged for nearly twenty years in studying the disease, does not attempt to show how it originates. His investigations simply begin with the obvious manifestations of it. And singular enough he remarks: "We have undertaken the task in a position of all others the most favourable to this kind of research; and have continued the study of particular facts, *until we have ceased to meet with anything new*, and long after we had repeatedly confirmed our own observations."

When an individual confesses that an investigation into the morbid conditions of the body, under any special forms, fails to present any novelty to his mind, —to have become in fact destitute of all interest, there is only one of two conclusions at which we can legitimately arrive: viz., that he has comprehended in his grasp a wide field of phenomena, and has thoroughly analyzed them in all their diversified relations; or that he has been satisfied with a limited view,— has seen but a short distance, and hence the complacency with which he contemplates his labours.

* Researches and Observations on the Causes of Scrofulous Diseases. By J. G. Lugol, M. D. Translated by Dr. W. H. Ranking. Preface, p. xxx.

Is it not strange that one with all his opportunities for research,—with all his accumulated facts, individually as well as in the aggregate fraught with great value, should not have discovered that the body possesses a NERVOUS SYSTEM—a system which links together all functions, and imparts to the organs by which they are exercised their vitality and energy?

In no part of his treatise do we find a nervous system mentioned. It would naturally be conceived that during almost twenty years of indefatigable inquiry, with his attention exclusively fixed upon scrofulous affections, the nervous functions would occasionally have obtruded themselves on his consideration in connexion with some of his facts, or in illustration of the justness of his reasoning. They never once awaken a suggestion bearing in the slightest degree upon the subject.

A few centuries ago it was not uncommon for eccentric classical scholars to compose lengthened Latin poems, omitting throughout some particular letter of the alphabet. The success with which they mastered the difficulties was creditable to their ingenuity. It is, however, a far greater achievement to analyze phthisis and scrofula, in all their phases and relations,—to study their origin, progress, and termination, without once naming the nervous system,—certainly never attempting to trace its influence, or its modifications either as causes or effects of the existing morbid action. This, however, is an achievement to which some of the highest medical authorities can indisputably lay claim.

LXXXIV. As the views of Lugol on the subject of

scrofula have far greater weight with the profession than they are entitled to, we shall, previous to developing our own, endeavour briefly to expose what appear to be serious errors in the doctrines which he inculcates.

"In our opinion," he observes, "tubercle has the same *origin* and *mode* of formation as any one of the organs of the body; it is itself a kind of organ, and like the liver or spleen, endowed with its own peculiar life; like them it has a spontaneous development."* It differs greatly, however, from these viscera in its origin and mode of formation. It has nothing in common with them. The latter form part of a general scheme of organization. They have nerves and blood-vessels which place them in relation with every living fibre of the body. They have specific functions to perform in harmony with the laws of animated matter, and their action is essential to the maintenance of these laws.

Tubercle has neither nerves nor blood-vessels appropriated exclusively to its use, stimulating and nourishing its structure, and connecting it with the entire animal economy. It is the result of a local morbid process. It is not organized, in the sense in which the term is universally applied to living tissues. It is the effect of *disorganization*,—of the breaking up of the natural relations of the parts immediately implicated; and the more aggravated the process, the more crude is the production which is evolved. It is at length converted into pus. Does such a conversion establish the exactness of

* Opus cit, preface, p. xxx.

the similitude between tubercle and the different organs, in regard to their origin and mode of formation? It is not possible to imagine a more unphilosophical doctrine.

LXXXV. He further observes, "that a man must have passed the age of puberty by several years before he will have the power of procreating healthy children; he must himself have arrived at his full strength and development to be able to impart the elements of constitutional vigour to his offspring. The re-union of these conditions cannot in general be counted on before the age of *twenty-five;* and all marriages, therefore, contracted earlier than this age must be considered precocious, *and unlikely to be productive of other than weakly progeny.* This law is not confined to the animal kingdom; it is equally exemplified in the vegetable world. A tree does not perfect its fruit in the first years of bearing; it is only after its roots have been firmly implanted, and the woody fibre has acquired its full development, that the fruit obtains the size and flavour of its species."*

A principle more obviously untenable was never laid down. Professional experience or scientific knowledge is not necessary to expose its fallacy. The observation of almost every one is sufficient to call to mind instances directly opposed to such a doctrine. They fall daily under the notice of mankind. And we could ourselves select from the circle of our acquaintance, numerous individuals, the fruits of marriage anterior to the age

* Opus cit., p. 65.

he specifies, possessing in a high degree both corporeal and mental vigour. A very large proportion of the population, both manufacturing and agricultural, marry before the age of twenty-five. We speak from extensive researches on these matters; and we can, also, testify to the average healthy and robust conditions of the progeny, including of course in the consideration of them the peculiarly unfavourable circumstances in which the greater part are placed; living in small and ill-ventilated dwellings, inadequately supplied with substantial food and the necessary clothing to protect them against the inclemencies of the seasons; put to work in their tender years when the sports and pursuits of childhood should be the measure of the demands made upon their bodily powers. These circumstances are fraught with a prejudicial influence, and they must be kept steadily in view in every attempt that is made to estimate, with any accuracy, the effects of marriage at different periods of life.

The remarks of Lugol, with respect to the vegetable kingdom, in illustration of his views, are opposed to the experience of the best informed horticulturists. The finest and the most highly flavoured fruit is frequently obtained from young trees, *and in their first years of bearing*, if they have not been forced prematurely; and provided the fruit, if abundant, be judiciously thinned. This is found to be the case with apples, pears, plums, cherries, peaches, nectarines, apricots, grapes, and various other productions.

Supposing all things equal, with regard to heat,

light, and air, the flavour will largely depend on the amount of fruit which the tree has to support. It must not exceed the powers of the plant to supply the required nourishment. This is an all important condition.

The writer loses sight altogether of another consideration which forms an essential element in the analysis of the subject. *It is unphilosophical to fix an age for the development of the human frame,—for the maturity of its vital properties.* The fruit on a tree is not ripened at the same moment. That which is favourably situated for catching the warmth of the sun and the invigorating breath of the breeze, is the earliest brought to a state of perfection. Are there no circumstances connected with human life, which may retard or accelerate the development of the animal system? Do we not observe their effects in reference to the mind? Are not those, who have enjoyed excellent opportunities for the acquisition of varied knowledge, as well as extensive experience, far fitter, from a ripened judgment and sonnd views, to undertake matters of intricacy and difficulty, than individuals who have not had corresponding advantages? The same argument applies with equal force to the body. Mechanical and agricultural pursuits, field and other sports, in which the affluent, or those who can command the luxuries of life, either habitually or frequently indulge, are conditions which inevitably tend to develop and mature the bodily powers. They create an aptitude for the vigorous performance of all functions.

These powers may be more thoroughly formed,—

may be characterized by greater energy, in one at twenty years of age, than they ever are in persons who dream away existence in indolence and ease. Why specify a period for their fitness for any of the duties of life? The doctrine betrays an ignorance of the comprehensive nature of the vital functions, and of the causes by which they are variously modified.

LXXXVI. Another of his assertions is almost equally open to the same objections. "Parents cannot," he remarks, "impart to their offspring the vigour which has departed for ever from themselves; their progeny is, therefore, debilitated, and often in so marked a degree, that the feeble and insignificant appearance of an old man's child has become proverbial. The decadence of the procreative faculty commences about the age of forty-five years; it is not very evident at first, but becomes sufficiently apparent after the lapse of a few years. The progress of this gradual decay may be seen in the case of men who marry for the first time late in life; their first children may perhaps be robust, but the health of the succeeding infants diminishes in proportion to their number."* This can by no means be established as a rule. The exceptions, if the subject be carefully examined, are nearly as numerous as those on which the hypothesis rests. Our own personal observation could furnish a multitude of instances to the contrary.

In his inquiry the writer appears to have no conception of *the general law which governs the transmission of vital conditions.* His argument may be

* Opus cit., p. 68.

shown to be illogical, and at variance with unquestionable physiological facts. He lays it down as an incontrovertible principle, that because the procreative power at forty-five begins to decrease, the health and robustness of the offspring will proportionately decline. According to such reasoning it would seem to follow, that a man, at this age, not being able to run, jump, or perform feats of agility, to the extent that he did at twenty-one, his children born, after this period, should exhibit an inaptitude for the same exercises,—that they should not be endowed with either strength or agility. This is not the expression of the law which regulates the transmission of vital properties. Health may, and frequently does exist with a diminution of the bodily powers, AND THE PROGENY CREATED UNDER SUCH CIRCUMSTANCES, WILL NOT PRESENT QUALITIES IN ACCORDANCE WITH THIS NATURAL MODIFICATION, BUT, AS A RULE, IN HARMONY WITH THE VIGOUR WHICH MAY BE REGARDED AS INHERENT.

This vigour, strictly speaking, is innate, and exists, though no longer manifested as in early life. It may, nevertheless, occasionally be so reduced by age, disease, and medicinal agents, as to be only partially transmitted to the progeny. Such cases, however, do not establish the principle for which Lugol contends. According to his views a decrease in the procreative power is a measure of the robustness of the offspring. They do not stand to each other in the strict relation of cause and effect. The decrease represents accurately the amount of vital energies exercised by certain organs, or it may be by the system at large;

but it is no just measure of the tone or quality of those elements which enter into the composition of the body. The diminution in the activity of one particular class of organs may arise from their abuse or disuse; and what relation has the result flowing from either condition *with the innate properties of the animal economy?* The transition from habitual sensual gratifications to the devoted cultivation of intellectual pursuits, would be accompanied with a proportionate decrease in the vigour of the generative system; but if such pursuits had not weakened the naturally healthy properties of the system, why should the offspring be stunted, puny, or delicate?

According to the reasoning of the writer, the different senses of the progeny of a father of the age of forty-five and upwards, should exhibit all the defects of the parents. Why should the ear hear acutely, or the eye see distinctly when in the parents the latter may be indebted to art for the accuracy of vision? BECAUSE THE LAW IS NOT THE TRANSMISSION OF EXISTING STRUCTURAL MODIFICATIONS, BUT OF INNATE PROPERTIES CHARACTERIZING THE GENERAL CONDITIONS OF ORGANIZATION.

The children born at an advanced age of the father may be small in stature and delicate of constitution, though we are familiar with numerous exceptions. The age is not the only circumstance to be considered in this case. The parent might be endowed with feeble powers of body; and, therefore, if the offspring had come into the world at an earlier period, they would probably have displayed similar conditions. To arrive at a just conclusion on this subject it is

necessary to discriminate accurately between the innate and the induced vital qualities, otherwise we shall be attributing to age what belongs to the natural properties of the animal system.

We should certainly be unwilling to contend that *decrepit* age was peculiarly favourable to the procreation of robust children; at the same time it may be fearlessly asserted, that in advanced years, if the constitution of the father be sound and vigorous, and that of the female equally so, the progeny born under such circumstances will be almost as likely to possess the healthy endowments of mind and body, as if created in the prime of manhood.

The observation of any intelligent individual can adduce instances in illustration of this fact. The greater part of the exceptions admit of an easy explanation. Lugol confines his attention to the age of the party, overlooking other considerations of equal, if not greater importance.

When an old man marries, whether for the first or second time, it does not necessarily follow that he was healthy at the prime of life. *This is assumed by the writer*, and hence the seeming force of his argument in reference to the imagined feeble, puny, or stunted offspring born at this time. To render his reasoning of any value, it is imperative to determine, in the first place, the character of the vital properties at an earlier period, and the manner in which they have been used or misapplied, and then the inquirer is in a position, but not otherwise, to say how much of the deteriorated vital conditions is clearly attributable to age.

In support of his doctrine, that the body is not matured or fit for marriage before the age of twenty-five, he alludes to the productions of the vegetable kingdom. Why not endeavour to test the correctness of his reasoning by an appeal to the lower animals, which bear more immediately on the question?

It is a fact, and notorious to all who are in any degree familiar with the turf, that age, within very comprehensive limits, is not objected to by the breeder. The Flying Dutchman, the most extraordinary horse of his day, was the produce of Bay Middleton when exceedingly aged. Woldsman, when twenty-five years old, was the sire of some of the best hunters in the country, and his stock was peculiarly distinguished by their property of *endurance*. Again, the celebrated Bees-wing was the offspring of Dr. Syntax, when nearly twenty years of age, and if less remarkable than others for speed, she surpassed all in her lasting qualities. In these, and numerous other instances which might be brought forward, it is evident that the great age of the sire is not a circumstance unfavourable to the creation of a healthy or vigorous progeny. The animal, at this time, is clearly capable of imparting to his stock the endowments for which he was remarkable in the full development of his powers. The same may, also, be observed of all other animals, whether domesticated or wild.

Lugol remarks, "the lower animals do not seek to copulate until their development is nearly or quite completed; but in them the quality of reproduction is *instinctive*, and relates solely to the propagation of the species. Man, in this respect, is below the brute;

for in him, a less creditable impulse, that of sensual indulgence, takes the place of instinct."*

If it be a law that man is not sufficiently matured for the propagation of a sound and healthy offspring until the age of twenty-five, and ceases to possess the power of transmitting these qualities soon after fifty, it should be equally applicable to the whole of animated nature. The law cannot be affected by any difference between instinct and sensual indulgence. If a certain condition of the body, in man, arising from the enfeebling influence of age, is prejudicial to the constitutional endowments of the progeny, a similar condition in the lower animals should be accompanied by corresponding results.

It may, and with truth, be asserted, that man may have injured his physical and mental properties by the undue gratification of his passions, and by other species of dissipation,—circumstances from which the lower animals are exempt. Admitting this to the fullest extent, is it not evident that the philosophical inquirer in his attempt to analyze the *effects* of age upon the offspring, should consider the influence of these circumstances apart from that of age? They do not necessarily belong to it. They operate at every period of life. It is illogical to argue upon results springing out of a combination of causes as if they originated in the agency of one cause alone.

LXXXVII. The next point to which Lugol adverts is fraught with deep interest and worthy of patient examination. He observes that "robust men, of originally strong constitutions, never procreate a scro-

* Opus cit., p. 65.

fulous offspring; and it is equally contrary to nature, that a scrofulous individual should be the parent of healthy offspring. Scrofula is, as it were, stamped upon the progeny, whether it exists on the father or mother's side alone, and *à fortiori* when it is found on both. *We regard the disease as inevitable when the fault is on the father's side;* but it has appeared to us that the law is subject to certain rare exceptions when a healthy man impregnates a scrofulous woman."*

The exceptions to his imagined rule are as frequent in the one case as the other. In the consideration of this subject the writer loses sight altogether of one important circumstance, which is not only universally admitted, but we have evidence of its influence throughout a large portion of the animal creation; and it is extraordinary that this never once suggested itself to his mind. He speaks of scrofula as a germ,—as a something which must *inevitably* be transmitted. It seems indeed as a dirty stream which no amount of pure water can correct or render innocuous. Are not the properties of one parent constantly modified by those of the other? Do not children at one time exhibit the mental and bodily qualities of the mother; at another those of the father, and frequently a blending of the constitutional endowments of both? What is the plain meaning of such mixtures? It admits only of one interpretation. The offspring is not necessarily like either. The father may have a scrofulous tendency,—his vital powers may be comparatively feeble; the progeny, however, may display the high physical conditions of the mother.

* Opus cit. p. 41.

These are not mere suppositions or ingenious speculations, but matters which fall daily under the notice of the intelligent observer. We may study the phenomena in our own families, but especially with advantage in the world at large.

What are the effects consequent on crossing the breed of animals? Is it not giving to the offspring properties widely different from those that would have resulted from individuals of the same general character? By a judicious selection we can modify the development of bone and muscle, the form, the speed, the temper and the vital qualities of the animal. We can calculate with considerable certainty on these modifications. What are marriages, in the majority of instances, but the bringing together individuals of different constitutions, or of opposite temperaments?

Do we not often find associated persons of very dissimilar vital conditions — the man overflowing with corporeal and mental energy, possessing a tone and wiriness of constitution equal to great and long continued exertions: the female, as remarkable for a mildness of temper, a delicacy of bodily structure, accompanied by an inability, or indisposition to take active and invigorating exercise, or enter with lively solicitude into the management of domestic affairs, allowing the busy world to move around her, if not unobservant of its motions, so deficient in energy of character as to display no anxiety to regulate or analyze them? Is there not here, as well as in the minor degrees of constitutional differences, a crossing of the breed,— a blending together qualities which have little in

common? And shall not the offspring, as is universally the case among the lower animals, partake more or less of these dissimilar properties? To deny the occurrence of such effects is at variance with every-day facts,—with the observation of all ages.

On the general immutability of this law depend the healthy and diversified mental and bodily endowments of mankind. It is constantly correcting what is delicate in structure, feeble in action, or morbid in tendency. In one case, it softens in the transmission the exuberant energy of mind, — its too excited and spiritual properties living at the expense of the grosser powers; in another, it imparts these properties to what would otherwise be a dull, sluggish and inanimate mass of flesh. It moderates and maintains the required balance of the vital properties. It prevents uniformity or similarity of conditions, which would degenerate into disease without the constant admixture of different vital qualities.

From the principles which are here laid down, and the reasoning and facts by which they are supported, it is evident that a scrofulous diathesis, in one parent, is not *inevitably*, according to the views of Lugol, transmitted to the offspring. It is not a germ unsusceptible of modifications, — a poison which must necessarily pass unmitigated or unsubdued to a succeeding generation. The doctrine is in the highest degree unphilosophical, and displays a lamentable want of just and enlarged ideas of the functions of life, and of the causes by which they are variously affected.

It is not to be inferred from these remarks that it is comparatively a matter of indifference, with respect

to the character of the progeny, whether one of the parents be healthy or diseased, provided that the other possess a sound constitution. Those who marry must not rest their happiness on such calculations. Our argument does not lead to this general conclusion. The law which we have endeavoured to elucidate has a more general expression, nevertheless in harmony with what has already been advanced, viz., THAT LIKE HAS A TENDENCY TO BEGET LIKE; and therefore as a rule, the more healthy the bodily endowments brought into association, the more sound and robust will be the offspring.

It is this law pervading the animal and vegetable creation,—the tendency of like to produce like, that establishes the correctness of the foregoing reasoning. This rests on the immutability of the law. It is manifested in the blending of the dissimilar elements which constitute the future being.*

LXXXVIII. It is further remarked by Lugol, "that the man who appears healthy, having scrofulous brothers and sisters, rarely, in reality, enjoys good health." † If personal observation in such matters is of any value, we could adduce many remarkable exceptions to this doctrine. Cases in which scrofula had manifested itself in its most aggravated forms in one or two members of a family, to such an extent indeed that diseased limbs were amputated to save, and successfully, the lives of the unfortunate sufferers; and yet some members of the same family are now

* There are several important considerations bearing on the operation of this law, which cannot with propriety be discussed in this place.

† Opus cit., p. 54.

living, and in the enjoyment of more than an average amount of health at fifty years of age; and during nearly a quarter of a century have rarely complained of any indisposition. We could bring forward other instances in direct opposition to the opinion expressed by the writer, and they might be studied with advantage, as illustrating the beneficial influence of *circumstances* on the conditions of the animal economy. In many of these cases the individuals have been engaged in active out-door pursuits, or have followed occupations which exercised equally the mind and the body, and from their position and habits have entered freely into the pleasures and relaxations of the social circle. Lugol does not allow that circumstances ever generate the disease,—a doctrine which is altogether untenable; they certainly may not only prevent its development, but may impart to the animal system considerable vigour,—a vigour which may be traced throughout a numerous progeny. On this point we again speak from observation.

An attentive perusal of the treatise of this writer, would certainly lead to the inference, that he had studied scrofula chiefly as it appears in the lower classes of society, and among the most miserable of these classes, destitute as they mostly are of the comforts and necessaries of life, living in small, ill-ventilated dwellings, and in unhealthy situations. Had his views been based on a comprehensive survey of the manifestations of the disease, under widely different conditions, they would have been materially modified in their character. He has looked at one side of the picture which pre-

sented the objects in a distorted and aggravated form, and not with the same attention at the other, which reflected the benign influence of a variety of counteracting and invigorating causes. Truths of high practical importance are not to be deduced from the extremes, but from the vast media which lie between them. The extremes are not to be excluded in our analysis,—they are pregnant with copious illustrations and suggestions; but their value largely consists in the light which they throw on the boundless phenomena connecting the two. It is from the contemplation of these that the philosopher draws his conclusions.

LXXXIX. Among the many sweeping observations of the writer, he states "that the noble families of England are desolated, and eventually extinguished by the progress of hereditary scrofula."* And in speaking of the scrofulous constitution, he remarks: "scrofulous families may be known at once by the general aspect of debility which pervades the children; their state of health is at the best negative, and totally deficient in the attributes of robust and healthy organization. There is always a greater or less want of harmony in the external configuration of scrofulous children; their trunk and extremities are not proportionately developed; but the limbs are either too long or too short, with large joints, and are awkwardly attached to the body."†

Were he at all familiar with the noble families of this country, with their offspring, either as children or adults, he would find that this description of the

* Opus cit., p. 66. † Opus cit., p. 3.

diseased, stunted and deformed body, did not generally apply to them. Nor are they short lived. The average duration of life is greater in them than in any other class of the population. It may further be asserted, that many of these families present some of the finest specimens of female beauty, whether the healthy and animated expression of the countenance be considered, or the exquisitely fine proportions of the trunk and limbs. And the same may be said with equal, if not greater force, of the other sex. These are consequences necessarily flowing from the position of the individuals. If some of their pleasures and amusements,—their occasional indulgence in ease and luxury are enervating and prejudicial to the powers of life, there are other accompanying circumstances fraught with a widely different influence. Their large and well-ventilated mansions, their frequent carriage and horse exercise, field and other manly sports, and their constant association in the gay and lively pursuits of existence, are conditions which must inevitably act beneficially on the human frame. That a writer should regard such orders as gradually extinguished by scrofula, is evidence that he knows nothing of them in this country, or of the circumstances peculiar to their rank, which tend in a far greater proportion to invigorate and develop the endowments of the body, than to render it an easy prey to the destructive progress of scrofula.

xc. There is one other doctrine advanced by Lugol, to which we shall advert. He observes, "the opinion that scrofula occasionally misses a

generation is altogether gratuitous. A man who is born of scrofulous parents, and is the father of scrofulous children, is himself scrofulous; to deny this would be to affirm that he is capable of imparting to others what he does not himself possess. The opinion that scrofula may pass over a generation has many analogies in the science of medicine; but they are the opinions of men who would interpret every phenomenon without the trouble of inquiring into its laws, and are therefore unworthy to be admitted within the pale of science.

"The facts upon which this opinion has been founded are fallacious; they are facts similar in all particulars to those already mentioned, in which the parent has been apparently cured of scrofula, or in which the disease, though not evident in the individual, existed manifestly in his blood relations."*

The fallacies of the writer on this subject are altogether attributable to his extraordinary notion, that scrofula is a *germ* in the system, and must necessarily be developed in every succeeding generation. This is an incorrect and unphilosophical view of the origin and nature of the disease. It is not to be regarded as a specific germ or poison, *but as a peculiar state of the vital powers prone to the manifestation of certain morbid conditions characteristic of debility.* It is a condition that belongs to the entire organism,—a condition which we shall presently endeavour to explain.

Scrofula is not inevitably transmitted. It may be thoroughly corrected in the offspring, partly from

* Opus cit., p. 81.

its modification, arising from the more healthy or vigorous elements of the other parent, and from the favourable circumstances in which the progeny may be placed. The doctrine takes it for granted that the child shall have the constitutional weakness either of the father or mother: that it shall necessarily manifest the transmission of the disease. It clearly loses sight of two important circumstances, which are universally allowed to produce an unquestionable effect on the character of the offspring, mentally and bodily; viz., the influence of the one parent, who may be perfectly sound, and the influence of a variety of causes, such as generous living, active exercise in the open air, agreeable and cheerful society, and frequent change of locality, scenes and pursuits.

There is scarcely a tendency to any disease, from a constitutional taint in one of the parents, that may not be corrected in the progeny, in some degree, by the different vital properties of the other that is sound, as well as by the favourable circumstances in which the offspring may be subsequently placed. The effects which result are easy of appreciation by every one. They are observed in every family. One of the members will have the mental and corporeal qualities of the mother; another those of the father; and if their course of life be different, corresponding constitutional and mental changes will inevitably present themselves. One will probably enter the naval or military service, or engage in agricultural pursuits: another may be confined to some sedentary and unhealthy occupation. In the one case, the hereditary predisposition to scrofula, may be, and frequently is,

altogether counteracted; in the other, it may be facilitated in its manifestations.

To deny the influence which such causes are capable of exercising on the animal economy, is to argue in the face of unquestionable facts—of truths with which every observant mind is familiar. Lugol, as before remarked, is led to adopt this extraordinary opinion from looking upon the disease as a germ that must, in the next generation, be developed; and not as a certain condition of the vital energies,—a condition of weakness which the sound parent may modify in the offspring; or which, if partially transmitted, may be kept in abeyance by the operation of external and internal causes.

XCI. We shall here terminate the analysis of the doctrines of Lugol. The remarks to which they have led are intimately connected with the study of scrofula. His well known labours in this particular department have given him a wide reputation, and imparted to his opinions an authority to which they have no just claim. His work exhibits considerable observation, but the facts which he brings under notice are examined in limited or detached points of view. They are never presented in their comprehensive relations to the living system; nor are they employed to elucidate any of the vital actions of the body, or the influence of a variety of circumstances upon it, in health and disease. The physiological knowledge which it displays is meagre in the extreme.

XCII. We shall now endeavour to explain the nature of scrofula. The first step is clearly to define

what is understood by a scrofulous constitution. In this there can be no difficulty. The symptoms are too obvious to be mistaken. The glandular system, the bones and the joints are peculiarly prone to become diseased. The parotid and the submaxillary glands are more frequently affected than any other. Their enlargement, in the first instance, is seldom accompanied with any pain even on pressure, or at least to a very trifling extent. After a little time they become sensitive to the touch, but rarely in an acute degree. The inflammation is never active. All the joints are more or less liable to the disease, as the hip, the elbow and the knee, as well as the smaller articulations.

The mesenteric glands, in infancy and early childhood, are exceedingly subject to those morbid conditions which are termed scrofulous. They are similarly affected as all other glands, and the symptoms by which they are characterized are generally well-marked. The abdomen is tumid and hard, the limbs are usually small and occasionally œdematous, the flesh soft, flabby, and pasty in its appearance.

In numerous cases in which the scrofulous tendency is not particularly developed, the eyelids and the nose are occasionally diseased throughout the greater part of childhood. The derangement of the stomach, the irregular state of the bowels, or exposure to cold, seriously disorders the functions of these different organs. The minute glands of the former become swollen, red, and at length discharge matter; and the vessels of the conjunctiva are often considerably affected. The mucous mem-

brane of the nose is inflamed, and at times ulcerated.

XCIII. The foregoing symptoms are the ordinary manifestations of scrofula. It must, however, be distinctly understood that it is not a disease confined to any particular class of organs, but is, in all its forms and degrees, expressive of the prevailing vital conditions of the body which may be either natural or acquired. They are usually the former.

The scrofulous constitution is invariably marked by debility, or, in other words, by a deficiency of vital tone, which may be accurately traced at every period of life, and under a variety of circumstances. The progress of years, invigorating occupations, generous or substantial living, and exemption from depressing passions, will often appear to have corrected the scrofulous diathesis in the adult; we have, nevertheless, evidence of its existence, both in what is regarded as robust health, as well as in disease. This class of individuals, as a general rule, are readily fatigued by laborious or severe bodily exertion. There is no lasting quality in them. The mettle is soon taken out of them. If attacked by fever or inflammation, the vital energies are quickly exhausted; nor will they bear what is designated active treatment.

XCIV. As every temperament or prevailing vital condition is necessarily based upon the innate properties of the nervous system, it clearly follows, *that every form and modification of the scrofulous constitution is equally to be referred to it.* It is this system alone which impresses upon every organ and living

fibre, the degree of activity by which it is characterized. The justness of this view is indisputable.

Writers, in treating of the several temperaments, endeavour to show that each is distinguished by the predominant development of certain parts of the animal economy, as the Nervous, by the nervous system, the Muscular, by the muscular system, the Lymphatic, by the lymphatic system. These distinctions to a certain extent are perfectly correct; but they are not in any way opposed to the principles here laid down. The chest may be capacious, and correspondingly the heart and lungs; the brain, the spinal cord or the muscles may be largely developed, but mere size does not imply extraordinary power. It is an important condition, but the *quality* of the tissues is equally worthy of consideration, which depends entirely ON THE INHERENT ENERGIES POSSESSED BY THE NERVOUS SYSTEM. The nerves do not convey in all individuals the same amount of the animating principle to the instruments of organic and animal life; and, therefore, though these may be large and well-formed, nevertheless, if the quantity of the vivifying agent distributed to them be exceedingly limited, their actions will be proportionately weak.

In the scrofulous constitution all parts of the body are inadequately supplied with nervous energy. The deficiency is not in relation to the glandular system in particular, but equally to every living fibre. The predisposition of certain organs to the disease is not attributable to any debility exclusively inherent in them, but to a variety of circumstances.

xcv. If such be the prevailing conditions of the nervous system, varying in degree, in all in whom scrofula is hereditary, it will be comparatively easy to elucidate its origin and nature.

We have previously endeavoured to prove that all vital actions must necessarily be in harmony with the existing state of the nervous system, whether such state be natural or induced; and, therefore, it inevitably follows that in the scrofulous constitution they will not only be feeble, but liable to frequent derangement. It is satisfactorily established by accurate and extensive observation, that in the constitution predisposed to the disease, the important processes of animal heat, digestion and secretion are imperfectly performed, or the functions are so delicately balanced that they are often disturbed by the slightest causes. The extremities and surface of the body are readily chilled. The former are habitually cold when the temperature is low, except when stimulated by vigorous exercise. This is evidence of the limited production and distribution of heat, and is a striking illustration of the susceptibility of the vital powers to disorder. The sudden or severe depression of the circulation in these situations, produces a corresponding depression in the functions of the internal organs, rendering digestion slow and difficult, and the action of the bowels irregular. The analysis of these effects has an intimate relation to the manifestation of scrofulous symptoms, as will appear from the following considerations.

We have, in the previous remarks, endeavoured to exhibit the peculiarities of the nervous system

in the decidedly scrofulous constitution, regarding them as the invariable foundation of the disease. It now remains to show in what manner they are to be traced in the operations of life.

The appetite, in the scrofulous habit, is usually exceedingly good. There is often a grossness in its character. Occasionally it is deficient and fastidious. The former condition, however, is that which ordinarily prevails in both sexes to the age of puberty. The bowels are frequently subject to constipation. The imperfect action of the digestive organs, whether from their natural weakness, or from food either too abundant in quantity or too rich in quality, IS ONE AND THE CHIEF EXCITING CAUSE OF THE PHENOMENA OF SCROFULA. The properties of the blood vary with the action of these organs. If their functions are inadequately performed, the chyle which is absorbed and carried to the lungs blending with and renewing the circulating fluid, *does not possess the essential conditions of health.* The elements, of which it is composed, have not been sufficiently elaborated in the various stages of digestion to convey an invigorating vital stream throughout the body. We have evidence of this in the symptoms which mostly fall under observation *previous to the appearance of scrofulous indications in the eyes, nose, or the external parts of the glandular system.* That an outbreak of some kind is to be apprehended is shown by the pallid or bloodless aspect of the countenance, the cold extremities, the feeble pulse, the want of appetite, and the usually inactive state of the bowels. We have been particularly struck with the expression

of the countenance, and have no hesitation in stating that most of these phenomena may be detected antecedently to scrofulous indications.

Such are the inevitable effects of an impure condition of the blood, and they are explicable only on this view. To what is the impurity to be referred, except to the imperfect operations of the digestive organs? Whether from a defect of vital energy, or from the improper character of the ingesta, the chyle resulting from the process of digestion and ultimately forming the circulating mass, is not sufficiently elaborated to impart health and vigour to the animal system. Hence the general want of tone or vital action by which it is distinguished.

There are other phenomena which indicate the impoverished and disordered state of the vital powers. The countenance is not only bloodless, but frequently swollen or puffy in its appearance. The eyes are dull and heavy, the bodily motions are languid; the urine is often scanty, cloudy, or deposits a sediment. There is a tendency to sleep, and the slumbers are deeper and more prolonged than natural:—they do not, however, refresh or invigorate the system.

XCVI. It now becomes our duty to account for the predisposition of certain parts of the body to the manifestation of scrofula, as the glands, the mucous membrane of the nose and eyes, and the joints in general. In the attempt to elucidate this important subject, there are two conditions which it is necessary to keep in view, *viz., the degree of vascularity of an organ, and its remoteness from the heart.*

All glands are particularly vascular. They are composed of minute vessels, and are equally abundantly supplied with nerves. The greater the amount of blood distributed to an organ, and the more extensive the functions it performs, the less is the circulating fluid influenced by the contractions of the heart. The motion of the blood depends almost entirely on the contractile properties of the capillaries, and, therefore, it inevitably follows that when the nervous system is more than usually depressed in the scrofulous constitution, and the blood likewise is deficient in its ordinary stimulating qualities, these vessels will be incapable of urging forward their contents, as in health, and hence the congestion or engorgement of the glandular tissue, which is usually the first symptom of the disease.

We have not simply to consider the deteriorated properties of the blood, but the co-existing want of nervous power. They reciprocally influence each other. A depression in the one induces a corresponding condition in the other. It is to the co-operation of these two causes that all glandular tumours are to be referred. It is on this view, also, that the indolent character of them, and their progress to suppuration, are explicable. The enlargement of the glands is evidence of their congestion, and, under these circumstances, with blood destitute of its ordinary stimulating properties. The longer this congestion exists, the more deteriorated or less adapted to the purposes of the organs, is the circulating fluid locally retarded in its motion; and the nerves proportionately become inadequate to their office. It

is, therefore, easy to conceive the nature of the difficulties opposed to the removal of scrofulous tumours. Without the aid of any medicinal agents or change of air, we have repeatedly succeeded in dispersing them, and with comparative ease, when the usual remedies, in the hands of others, have been inefficiently tried. The treatment adopted was the suggestion of the consideration of the morbid conditions of the organ, *viz., the retarded circulation, the deteriorated properties of the blood, and the want of nervous power.* There are means of correcting these effects, in numerous cases, without having recourse to a variety of medicinal agents.

The mucous membrane of the eyes and nose is, also, exceedingly vascular, and in these situations the blood which it receives is far removed from the influence of the heart, and hence, as a necessary consequence it is feeble in its motion. The force with which it circulates declines with the distance from the central propelling power, so that in such remote regions it moves almost altogether from the contractile properties of the capillaries. It is in the mucous membrane so circumstanced that the circulation is the weakest, and, therefore, in the scrofulous constitution, the structural changes characteristic of the disease will be extremely liable to occur. The minute glands of the membrane become engorged, and having means of partially relieving themselves, they pour out their purulent contents upon the adjacent structures.

We next come to the consideration of the suscep-

tibility of the larger, as well as the smaller articulations, to the disease. It is in these that it frequently manifests itself. All joints, according to the degree of their action, require an abundance of blood and nervous power, especially of the latter, as it is this which is called into play by and regulates every muscular motion. Taking into account the depressed state of the nervous system, and the co-existing debility of the circulation, it would be expected from the influence of these two conditions, that the joints generally would be particularly liable to be affected. If the nervous energy be greatly diminished in these situations, the circulation will be equally disturbed, and hence the gradual morbid changes which take place in them. The blood and the nervous fluid in all of them are far removed from their respective sources, which, as already remarked, is a circumstance worthy of consideration in the analysis of the causes producing scrofula.

When the joints are attacked, the highest surgical authorities, in this country, enjoin their entire rest. Lugol, on the contrary, attributes the greater part of his success in the treatment of them, to keeping them more or less in action. The benefit resulting from his plan, though it would be injudicious to adopt it generally, is in perfect harmony with the principles here laid down. The partial motion allowed to the joints, *necessarily tends to invigorate or maintain the circulation in them; and at the same time to stimulate the nerves;*—to accomplish these effects is to counteract the tendency to the disease. The source

and foundation of it are the stagnate and impoverished condition of the blood, and the weakened nervous energy.

The mesenteric glands are frequently affected in scrofulous children. The foregoing observations, made in reference to the glands generally, apply equally to the former. From their vicinity to the alimentary canal, they are subject, however, to other causes of disturbance. The bowels are often distended, and otherwise disordered by food too abundant or difficult of digestion,—conditions which will variously derange the circulation in all the neighbouring organs, and the mesenteric glands will necessarily be more or less influenced by them.

XCVII. In the foregoing brief and imperfect remarks, we have endeavoured to elucidate the character of the vital powers distinguishing the scrofulous constitution ; — and have attempted to trace the nature of the morbid changes constituting the local symptoms of the disease. In support of the views which are here developed, we may allude to the comparative freedom of certain organs from the ravages of scrofula, at least, in early life. While the joints, the bones or the glandular system may be deeply involved, the lungs are rarely attacked, and in fact much less frequently in the scrofulous constitution, than the organs in question. It is not difficult to explain the cause of their frequent exemption. The lungs receive an immense amount of blood, but it is here differently situated from what it is in other parts of the body. It is to a great extent directly influenced in its motion by the contractions

of the heart, and its circulation is further promoted by the reception of the stimulating principles of the air in exchange for those which are deleterious,—circumstances which necessarily keep the blood in lively motion, and consequently it is not, as in other regions, liable to become *stagnate*, which is the first essential step to the structural changes subsequently induced.

XCVIII. It is not our intention on this occasion to enter at length into the treatment of the disease. In these limited, but important inquiries, our object has been to analyze the origin and nature of the several affections brought under notice. To understand the sources whence these spring, or the character of the vital powers generally, as well as locally, with which they are associated, will suggest the appropriate measures to correct them.

When we take a comprehensive view of the prevailing conditions of the nervous and circulatory systems, in the scrofulous constitution, both inactive —both deficient in their ordinary stimuli; and further consider the nature of the relations uniting the two, and the various means independently of medicine by which they may be aroused to increased action, there is a wide and interesting field open to our operations.

To invigorate the circulation, in any region, is to improve the properties and motion of the blood generally, as well as to impart additional energy to the entire nervous system. The surface of the body is a portion of this ample field which presents itself. To excite the motion of the blood on this surface,

whether by friction, warmth, cold or exercise, is to affect the vital endowments of every fibre of the animal economy,—is to put in motion a larger and more stimulating vital current, the effect of which is to carry new life to organs struggling to recover their natural tone.

The value of this surface, as a medium for our operations, has not hitherto been appreciated by any writer; nor was it possible with the limited prevailing knowledge on the functions of the nervous and circulatory systems. For the mind to be enabled to take a comprehensive view of the influence of remedial agents, it must first clearly understand the nature of the vital conditions on which they act. The latter can alone give the required insight. The richness or variety of a prospect is in some measure according to the elevation we attain for observation.

There are few diseases demanding nicer management or more judicious treatment, than scrofula. Though it is characterized by debility, it is not of that kind which arises from over exerted powers, or consequent on the existence of a previous acute affection, where rest, or gentle exercise and appropriate living, readily re-establish the health. It is debility springing out of the generally disturbed state of the functions of life. They are all languid and disordered *from the want of more vitalized blood and greater nervous energy*. Tonics and substantial food may appear to be indicated; but the system must be prepared for their efficient action, otherwise they aggravate what they were intended to correct. In the higher and middle classes of society,

warm and stimulating purgatives are generally the first important measures to be employed, and may be repeated with advantage. Their efficacy does not consist in removing accumulated matters from the intestines, but in relieving the congested state of the viscera, and, from the action created in them, every part of the body. The circulatory and nervous systems have a freer scope for the exercise of their functions, and from the changes immediately effected in them, they are enabled to enter on fresh and more vigorous duties.

XCIX. A thorough understanding of the functions and influence of the nervous system, will clearly show that the tendency to scrofula, and all its symptoms, are to be traced to its feeble properties, either inherent or induced in it by a variety of circumstances depressing the powers of life. It is not a germ or poison which we have to combat in the employment of remedial measures, but a debilitated condition of this widely pervading system, the prejudicial influence of which operates chiefly in two ways: *It prevents the production of perfectly elaborated blood, and proportionately modifies its appropriation to the purposes of nutrition in the different tissues to which it is distributed.*

We have no hesitation in stating from extensive experience, that previous to the manifestation of any scrofulous symptoms, the digestive organs are always obviously disordered. The derangement is not usually indicated by the want of appetite, though this is often observed. It is more frequently gross in its character. The phenomena

which establish the existence of such derangement, are a torpid state of the bowels, and a remarkably pale or pasty appearance of the body; and where there is a predisposition to dyspnœa or cough, the lungs labour, and the respiration is short and wheezing. There is likewise a puffiness of the face, which, to an inexperienced eye, sometimes conveys the idea of robust health.

The expression of the countenance, and the constipation, are symptoms which show that the digestive organs have been unequal to the thorough elaboration of the food, — that the chyle which results is impure in its qualities, and has not undergone the necessary chemical changes in the lungs to fit it for the purposes of nutrition. On this view all the phenomena of scrofula are explicable, whether they be enlarged glands, diseased joints, inflamed or ulcerated mucous membranes. The *proximate* cause of the symptoms, how diversified soever they may be, is to be found in the existing condition of the nervous system. The muscles generally are characterized by a want of tone, and it is to a deficiency of vitality in the nerves distributed to the digestive organs, that the inadequacy of these to perform correctly their respective duties, is to be ascribed. The stomach, the liver, the pancreas and the bowels, have not the energy necessary to produce sound digestion, and its invariable effect,—nutritious and stimulating blood. The same state of the nervous system being common to the entire body, it is easy to imagine that the vital stream will not only be incapable of imparting vigour, but the tissues, to which it is transmitted, will be

wanting in those vital properties essential to its healthy appropriation.

c. It is we conceive on these principles only that the phenomena of scrofula admit of a rational explanation; and it is the first attempt that has hitherto been made to refer them to any clearly defined constitutional conditions, whether inherent or induced. Writers have previously furnished no information whatever on the nature of the disease. They either acknowledge their inability to account for it in any degree, or speak of it as a germ or poison. Lugol says, "the question will probably be asked,—what is this scrofulous taint? We shall not attempt to reply to the question so propounded, for the reason that it does not admit of a satisfactory solution."* Had this admission come from one who had deeply studied the animal economy, its functions, properties and influence; and who had grasped the general laws which govern vital action, his authority would have possessed no ordinary weight: but when we find from an attentive perusal of his treatise, whether in reference to the origin, progress or treatment of scrofula, that it displays a lamentable deficiency of physiological knowledge,—of sound or comprehensive views, or rather the absence of any views at all tending to explain the phenomena of life, either in health or disease, little importance can be attached to his authority on such a subject. It is extraordinary that during more than twenty years devoted to this particular branch of inquiry, his mind was never raised from the contemplation of obvious facts to an attempt

* Opus cit. Preface xxx.

at an analysis of the causes of them; or that he should not occasionally have been led into investigations of the vital powers, in the hope of throwing some light on the laws by which they are regulated, and on the nature of their disturbance giving rise to the disease. It may, perhaps, be urged that this adds greatly to their practical value. A limited capacity is equal to the collection of facts. But he who is capable of observing accurately, and at the same time traces the phenomena which fall under notice to their respective causes; or who brings them under consideration in their relations to views explanatory of the modified conditions of the body, places in the hands of the practitioner remedial resources of far greater potency than any that can possibly result from the accumulation of facts, studied apart from physiological principles.

A large portion of the medical profession regard all inquiries into the powers of life, as matters having little connexion with the healing art. They are looked upon as fruitful only in ingenious speculations, as fraught with no obvious applications to the treatment of disease. How much they have to learn of the *value* of the symptoms by which they are guided in the exercise of their skill. These symptoms have a value varying with the knowledge of the observer. The language which they speak to one, is obscure or unintelligible; to another, it is suggestive of prompt and active means equal to the exigencies of the case.

Such inquiries may lead to vain and unprofitable speculations;—may give rise to hypothesis prejudicial in their influence when recklessly carried out in

practice. This, however, furnishes no argument against the study of the animal economy. The objection is against the mode in which the investigations have been conducted, or the illegitimate conclusions hastily deduced from them.

CI. In the consideration of the treatment of scrofula, there is one object which prominently presents itself to our attention, viz., *the correction of the disordered state of the digestive organs*, which must be the foundation of all subsequent and permanent improvement. It is to be accomplished in various ways according to the age and constitutional peculiarities of the individual. Warm and stimulating purgatives will often be among the first means to be employed. They relieve the congested and inactive organs, and from their effects upon the bowels, the circulatory system is enabled to throw off a portion of its contents, producing a marked alteration in the appearance of the countenance, as well as in the feelings of the patient. This step is not always advisable. It frequently happens that the stage in which the practice could with propriety be enforced, is past: languor and general debility prevail, hence tonics and alteratives may be indicated. In most cases, however, such purgatives may be used with advantage. The efficacy of their operation consists less in a direct action on the alimentary canal, than in relieving the unhealthy state of the circulatory system generally—an important preparatory condition to enable other remedies to effect a speedy and salutary change.

There is no disease, the treatment of which requires

greater care than scrofula. To impart energy to the powers of life by nutritious and generous diet, as well as by remedies imagined to be strengthening in their influence, is an obvious and urgent consideration; but it is often found to be exceedingly difficult of accomplishment. Measures which, under other circumstances, would readily produce the result, fail not only from want of tone in the digestive organs, but *from a similar condition pervading the whole of the nervous system*, which is to a great extent incapacitated for its ordinary duties, and to stimulate it in the hope that it may be rendered equal to the vigorous performance of them, frequently aggravates the existing derangement.

We have already expatiated at considerable length on the beneficial effects of friction on the surface of the body. In no disease is the advantage of its employment more decided than in scrofula. It is one of the most powerful corrective agents with which we are acquainted. It invigorates the circulation and improves the qualities of the blood. It relieves internal congestion, and thereby enables the different organs to perform their functions with regularity and ease. The muscles lose their pasty and flabby condition, and the body acquires strength and agility of motion. If steadily persevered in for months, it will protect the system from the inroads of scrofulous disease, or at least be efficacious in a far higher degree than any other mode of treatment. It secures a vigorous circulation not only on the surface of the body, but throughout the animal economy,—it imparts additional energy to the nervous

system,—effects which are almost incompatible with the progress of disease characterized by debility. It is not to be enforced to the exclusion of other remedies, but it will nevertheless render many of them unnecessary.

As previously remarked there is often a difficulty, especially in children and youth suffering from scrofula, in adapting somewhat generous diet to the necessities of the system, or in enabling it to appropriate with facility the nutritious elements which it receives. This difficulty is materially diminished by the employment of friction. By exciting and invigorating the external vital actions, a proportionate improvement is effected in all the internal organs. The circulatory and nervous systems acquire additional stimulating properties, and hence all tissues participate in the freer play of the powers of life. In this respect the remedy has important claims on our attention. Its mode of operation assimilates in some degree to that of active out-door exercise. By arousing to increased motion the whole mass of blood,—by bringing it into new relations with every molecule of living matter, it derives from the induced accelerated chemical changes in the lungs greatly augmented vital properties, the distribution of which lays the foundation for the re-establishment of health.

It is scarcely necessary to insist on the importance of fresh air and exercise. Their value is too obvious in the treatment of every form of scrofula, not to be fully appreciated by all interested in the well-being of the patient. The exercise should never be carried to the slightest approach of fatigue, for

then in place of invigorating it becomes an exhausting process. On this subject Lugol remarks; "The scrofulous habit, although it is in general characterized by indolence and apathy, is not altogether incompatible with a certain amount of bodily activity; this very activity, however, instead of tending to the increase of the physical strength and development as in healthy subjects, on the contrary, assists in diminishing its powers: we observe therefore that scrofulous children, in whom this more than usual activity is manifested, are quickly fatigued, and are slow in repairing their exhaustion."*

The scrofulous habit, characterized by such activity, is generally far easier to treat than where indolence or apathy is constitutional. Generous or substantial living will usually agree far better with those who are naturally active, than with those possessing the heavy, phlegmatic temperament. The difficulty is far less in subduing the derangement consequent on the scrofulous predisposition in the former, than when it occurs in connexion with the languid and feeble vital actions of the latter.

CII. Though it is not within the scope of this inquiry to profess to lay down precise rules of treatment, the object being to explain the nature of the disease, we will make a few additional remarks on the subject. Cod-liver oil is an invaluable remedy in scrofula, if judiciously employed. To secure, however, its full advantage, it frequently requires an attention to circumstances which are not always sufficiently considered. It is not to be used indiscriminately simply

* Opus cit., p. 9.

because it is regarded as applicable to numerous cases.

Previous to employing it, it is desirable, as far as possible, that the engorgement or inactivity of the abdominal viscera should have been relieved by other measures. Nor should it be continued for any length of time without occasional intermissions. During these intermissions decidedly beneficial effects will arise from the drinking of tar-water daily. This possesses far greater virtues than the present generation is familiar with, and its action is well worthy of being studied.

The continued use of cod-liver oil has appeared to us to *over dose* the system. Whatever be the nature of the influence it exerts, it has its boundary, which it is not wise to exceed in the hope of obtaining more than the legitimate amount of good which it is capable of conferring. We are apt to push all remedies beyond the line which circumscribes their efficacy. We are too anxious, to wait for the effects which flow from the impression they have made upon the powers of life.

CIII. In the investigation of the several diseases discussed in the foregoing pages, we are fully sensible we have not done full justice to them. The object has not been to present an elaborate analysis of the morbid conditions in which they originate, and by which they are characterized in their different stages; but to bring under consideration *the physiological principles explanatory of their nature.* We may in some measure have failed in the attempt; we are, nevertheless, thoroughly convinced, how widely

soever the princip les may be imagined to deviate from truth, that the novel points of view in which the important subjects have been exhibited, will, even in the mi nds of those who combat them, excite new trains of thought, and exert an unquestionable influence on future researches into the origin, nature, and treatment of disease. He who perseveringly endeavours to disclose the laws of vital action, in reference to morbid phenomena, never labours in vain. The soil he turns up has always some elements pregnant with interest, which, in spite of prejudice, illiberality or ignorance, will assert their claim to attention.

CHAPTER VI.

CONCLUSION.

CIV. In reviewing the foregoing remarks, in reference to the several diseases brought under notice, it is evident that the physiological considerations by which they were suggested, have a direct application to every morbid condition of the body. Whatever may be the nature of the deviation from health, or whatever structures may be implicated in the existing mischief, the first step in the process of disordered vital action, is to be traced to the derangement of the nervous system. As already observed, it is this system which is alone susceptible of impressions, whether of a beneficial or injurious character. By impressions, is to be understood whatever is capable of modifying vital operations, whether to the advantage or detriment of the powers of life. Many diseases are ascribed by the highest authorities to the deteriorated properties of the blood occasioned by the impurity of the air respired, or food destitute of the essential elements of nutrition. That the circulating fluid is materially changed in its qualities in all aggravated morbid conditions, is a fact as well established as any in the wide range of pathological researches. It will still further be admitted, that these conditions are largely maintained by the vitiated qualities of the blood.

CV. In the analysis of this subject it is important that we should not confound causes and effects. It is an error we committed ourselves in an elaborate experimental inquiry published more than twenty years ago,—an inquiry which has received the commendation of the profession, both at home and abroad.* We have no disposition to spare or conceal our own faults. Truth demands the candid acknowledgment of them; and it is made with feelings of pleasure rather than of wounded pride. Had the arguments which were brought forward in support of the physiological views developed been confirmed by subsequent investigations and more matured reflection, the result would unquestionably have been a source of high gratification. Is there, however, no delightful emotion springing up in the breast in contemplating our individual progress in science,—in attaining to juster and more comprehensive conceptions of the phenomena of life,—in being able to seize them in a greater variety of forms and relations, and in having the conviction that the increase in such knowledge proportionately extends and refines the application of remedial resources? It is for truth that we have laboured, and not for the purpose of upholding a scientific consistency of character. With the same readiness we would discard the principles pervading these pages, were they proved, by the researches of others or our own, to have no just foundation.

CVI. In admitting that the blood may be seriously

* An Experimental Inquiry into the Laws of Organic and Animal Life. 1829.

deteriorated in its properties, giving rise to or being associated with disease, the cause of such change is nevertheless to be sought in the nervous system. We will endeavour to illustrate the correctness of this opinion by an analysis of a particular case, but one of frequent occurrence. The breathing of impure air,—or air destitute of the elements essential to the support of life in all its integrity, is one of the prevailing sources of fever. How does such air act, whether vitiated by the addition or subtraction of something which modifies its condition? It at once mingles with the blood in the lungs, and the moment that it is received it depresses the nervous energy of these organs, and produces a corresponding effect on every part of the nervous system to which it is conveyed through the medium of the circulating fluid. All vital action becomes languid. General prostration is the result, as is shown by numerous phenomena which it is not our business minutely to describe. The different organs are variously affected. Sometimes the head,—at other times the lungs, and not unfrequently the bowels appear to be the exciting cause of the fever. This, however, is a disease of the whole body. It has no special localities. It is in the highest degree unphilosophical to endeavour to trace it to any individual organ. The attempt proceeds on the supposition that an agent which directly influences every nervous fibril, —every molecule of living matter, can have its injurious influence confined to a particular region.

The impression made upon the nervous system is the cause to which the altered properties of the blood

are to be referred. The change occurs somewhat after the following manner: the motion of the vital current depends on nervous power. If this be withdrawn, or becomes unequal to its ordinary duties, the heart, the arteries, and the capillaries, are incapable of exercising their usual functions;—they can no longer maintain the balance of the circulatory system, and hence the blood accumulates in the different viscera. Such disturbance in its distribution is incompatible with its healthy condition. When it no longer possesses its normal properties, it is a source of disease,—it aggravates the existing symptoms, and presents one of the formidable difficulties which has to be overcome in the successful application of remedial measures.

If this be a correct explanation of the modifications which fall under observation, is it not evident that the proximate cause of the morbid phenomena is to be traced to the derangement of the nervous system? Not to any particular portion of it, but to the general depression or disorder of the whole.

CVII. The justness of these principles and the train of reasoning employed in their elucidation, may be shown to be equally well established by the examination of any other exciting cause of typhus or typhoid fever. Whether it arise from atmospheric changes, from exposure to wet or cold, from over exertion either of the mind or body, from mental anxiety, or from the unyielding irritation of the mucous membrane of the alimentary canal, its origin and progress are explicable on the same general views. A difference in the nature of the causes does

not materially modify the explanation. *They all tend to depress the energies of the nervous system.* The first effect of the impression received is usually a greatly excited action, as if the vital powers roused themselves to throw off the baneful influence, but rarely with success. The next stage is that of general prostration accompanied with a tendency to insensibility.

CVIII. These remarks on the derangement of the nervous system, as the foundation of all disease, have a further application, and one which cannot be too strongly urged on the consideration of the mind. If the system be thus influential in the production of morbid conditions, whatever may be their character, it necessarily follows, THAT IT WILL BE EQUALLY EFFICIENT AS A MEDIUM THROUGH WHICH THEY MAY BE CORRECTED BY REMEDIAL AGENTS.

Whatever line of practice be adopted, if suggested by sound physiological principles, the object should be to act directly on the nervous system. It is this which binds in one indissoluble chain every particle of animated matter; and, therefore, whether by external or internal means, or both combined, we succeed in awakening its energies,—in stimulating it to increased action, we impart to it a power which gradually restores the animal economy to health.

CIX. From the wide distribution of this system, and its extraordinary susceptibility of impressions, an ample field is presented for the employment of remedial agents,—a field, the extent and nature of which have not been fully apprehended by any known inquirer. It has never been seized in its comprehensive rela-

tions to the functions of life. Were it necessary to adduce evidence of the justness of these strictures, it would be furnished in abundance by an examination of the active, injudicious, and contradictory measures adopted in the treatment of fever.

The profession is not sufficiently sensible of two important facts bearing directly on the healing art: viz., the acute susceptibility of the nervous system to impressions, and the extraordinary potency of minute doses of medicine. The influence of the latter is of course largely dependent on the conditions of the former. The practitioner usually employs remedies in such doses as he knows will produce an immediately obvious effect.

The considerations which dictate this line of conduct are prejudicial in the extreme. They imply a want of faith in the innate energies of the vital powers, unless thus powerfully acted upon; and in the unquestionable efficacy of drugs prescribed in exceedingly minute quantities. We are not surprised at the scepticism which exists on the latter point. We have entertained it in all its virulence, and ridiculed the seeming absurdity of the doctrine. Our conversion was gradual, and to ourselves an unconscious change. The inquiries which we had long pursued concerning the properties of the nervous system,—exhibiting the wide influence which it exerts in all vital actions, and establishing its claim to be regarded as the source to which all morbid deviations are to be referred, necessarily forced on the attention of the mind *its importance as a medium for the conveyance of impressions*, whether

arising from medicinal or other agents, to all parts of the body.

CX. The contemplation of the nervous system under these different aspects, and especially as the only medium on which we can operate in the attempt to arrest disease, naturally suggested the probable potency of minute doses of drugs. Why should they not possess an influence when we consider the susceptibility of the system on which they act,—a system which is acutely alive to an exhaustless variety of impressions? It was easy to settle the point by direct experiment. To this we had recourse, and the results, derived from a few well-known and constantly employed remedies, were perfectly satisfactory. The experiments, at first, were not carried beyond a less proportion than the sixteenth part of a drop of an active tincture; but are subsequently made on higher dilutions and with unequivocal manifestations.

CXI. Many causes have tended to retard the study and progress of Homœopathy. One of the most prominent, is the ignorance which generally prevails concerning the principles on which it is based. These are strangely misinterpreted,—or rather they are seldom at all understood by those who presume to decry them. When the abuse of anything is almost universal, it is extraordinary what a limited acquaintance with its merits is required to condemn it, and in such a manner that the opinions expressed appear to be the result of inquiry into its claims to consideration. The bulk of mankind rarely think for themselves. They

are the passive recipients of the ideas of others, and especially of those who are regarded as capable of forming a just estimate of the value of discoveries or innovations in medical science. Were the readiness of the latter to examine, at all corresponding to their acquirements and intellectual powers, they would be an authority of no mean weight. In proportion, however, to the elevated position they occupy in the profession, or the reputation by which they are distinguished, is the indisposition to investigate doctrines widely opposed to their own. This is perfectly natural. The views they entertain have probably been adopted after much thought, observation, and experience, and consequently to admit any light into the understanding from sources, which call in question the soundness of long-cherished opinions, is scarcely to be expected. To allow it to enter—to analyze it—to test it experimentally, and if found to possess the properties of truth, to acknowledge the fact, in opposition to the strong suggestions of self-interest, demands a rare combination of mental qualities.

Such men are seldom the first to receive new truths. They are generally forced on their attention by the zealous exertions of an inferior class of minds,—or minds more independent in their exercise from the less embarrassing position of the individuals. The truths are urged from below upwards,—the current gathers strength in its ascent, carried along by an irresistible impulse derived from the convictions of the many and the ennobling authority of the intellectual few.

CXII. To those who are anxious to inquire into the foundation of Homœopathic principles, we would recommend to their consideration the steps which suggested themselves to our own mind, when we had almost insuperable prejudices to be overcome in regard to the efficiency of small doses. Let them try the potency of one drop of a well-known active tincture—as of laudanum for example—in an ounce of water well agitated, given either to children or adults, to induce sleep or to allay an irritable cough, and we will answer for the satisfactory character of the result.

Let them afterwards test the influence of a less quantity, and if the effect exceed their anticipation, which it unquestionably will, on what grounds is it possible to deny the agency of a vast variety of remedies in similar doses? No two vegetable or mineral products can possibly act alike. Each possesses its own intrinsic properties, and it will be the labour of ages to ascertain what these properties are, or rather the power they are capable of exerting on the vital energies.

CXIII. The progress of Homœopathy, is not only obstructed by circumstances which are almost inseparably connected with the introduction of novel views, but largely by the conduct of many of its injudicious advocates. They have not done justice to the cause by the dignity of their proceedings,—they have lowered rather than elevated the professional tone of mind,—they have thrown around the doctrines an air of charlatanism, and hence much of the opposition which they have had to encounter. There are illus-

trious exceptions to these strictures; men, who by their learning—their love of knowledge—their varied attainments—their fine sense of honour, and their unsullied probity, secure to themselves, and the principles they profess, respect and consideration.

We regret, also, to find among many of the ardent followers of Hahnemann, a tendency to disregard or underrate the value of the study of physiology and morbid anatomy, and not unfrequently a disposition to treat with contempt the remedial resources which a knowledge of these important branches of science places at our command. The province of the intelligent physician is to look widely abroad on nature—to gather information from every department of inquiry—to examine dispassionately the alleged curative influence of every mode of treatment. It is in this way only that he can become eminently successful in the employment of his art,—that he can indeed fully understand the comprehensive bearing of his own peculiar views. It is the certain mark of a contracted mind to be unduly wedded to a limited class of ideas.

CXIV. Homœopathy is not universal in its application,—or more correctly speaking, it does not offer the most efficient means to combat every form of disease. It is in many cases immeasurably inferior, as a curative agent, to Hydropathy; nor does the legitimate exercise of the principles exclude the co-operation of other remedies. Whenever the existing morbid condition admits of *re-action*, minute doses of medicine, judiciously selected, may be given with great advantage. The power of re-action

characterizes an extensive class of diseases. It belongs to all those which are usually designated functional. When, however, the structure of organs is seriously altered, or when these organs are incapable of their duties, from long continued congestion, other modes of treatment will often be found far more efficacious than the exhibition of drugs, whether in large or small quantities. The enlightened Homœopath will not only acknowledge the truth of these remarks, but will allow that occasionally the necessity exists for securing the co-operation of other means than those which he usually employs. We willingly admit the potency of minute doses of active remedies. We claim, however, the right to entertain our own particular views in reference to their action. The determination of the question is one of no ordinary difficulty. It is by no means so simple a matter as is generally imagined. It demands a wide range of well observed and accurately conducted experiments, under every possible circumstance, taking into consideration, at every step, the effects arising from change of diet, of exercise, of habits, and numerous other causes, the just measure of which must be clearly understood, and in no degree confounded with those which result exclusively from the remedy employed. To trace the action of this free from all foreign or modifying influences, is the intricate problem which is presented to the physiological inquirer.

CXV. If such be the nature of the difficulties which embarrass the analysis of the action of remedies, it is clear that the task will require minds of the highest order of intellect, acute in perception, ready in the

detection of fallacies, familiar with the rules of philosophical investigation, sober in judgment, and circumspect in the deductions drawn from observed facts. These mental qualities belong not to the many who exercise the healing art according to any of the prevailing doctrines. The want of discrimination which frequently marks their conduct, and the consequences to which it gives rise, are among the formidable causes retarding the steady progress of truth in connexion with medical science.

We may, perhaps, be told that it is in the power of all to interpret justly the action of remedies,—the effects being as obvious to the limited as to the enlarged understanding. We admit that the perception of certain effects may be common to all; and that some of these may appear to establish beyond all question the curative influence of the several remedies employed. The difficulty is to determine what proportion of the effects belongs to the particular agents prescribed. A cure which occurs as a sequence in time is evidence of an exceedingly questionable character. All methods of treatment are abundantly rich in such imagined incontrovertible proofs. The value of these consists in the ability of the observer to discriminate—to analyze the phenomena which offer themselves to his mind; and their use in regulating the conduct of others, depends on the truthfulness with which all circumstances are stated, either directly or indirectly associated with the operation of the agent.

THE END.

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