THE PART TAKEN BY

NATURE AND TIME

IN THE CURE OF DISEASES.

A DISSERTATION

FOR WHICH A PRIZE WAS AWARDED

TO

JAMES F. HIBBERD, M.D.

BY THE

MASSACHUSETTS MEDICAL SOCIETY,

1868.

[It is understood that the Society is not to be considered as approving the doctrines contained in this Dissertation.]

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"Nature dominant—Art ancillary."

PREFACE.

In the abundant and diversified literature of medicine, the diligent bibliographer may find authority for almost any position assumed. The writer has not, therefore, in the following pages, sought to sustain his views by an array of cited professional opinions, although he has not failed to quote authority for particular facts, for prevailing professional sentiment, and for historical data; and when so quoting, an earnest effort has been made to select from writers more distinguished as representatives of the profession than for the individuality of their characteristics.

The aim has been to inductively demonstrate "the part performed by nature and time in the cure of diseases," and to substantiate the point in a scientific and philosophic manner, beginning with such general principles, facts and assumptions as are acknowledged truths by intelligent persons, and arguing from the premises to logical conclusions.

The author has an unfaltering conviction, that no right estimate of the relative parts performed by

nature and by art in the cure of disease can be made, except the initial movement be from the stand-point of biology—normal and abnormal. In this paper it is, of course, only possible to lay down the broader generalities that should guide in this direction; still it is hoped enough is said to indicate the value and necessity of this line of study.

Some readers are apt to credit an author, not only with the views and opinions expressed in his writings, but also with others that they infer his reasoning would lead to. This is more than an author should have done for him. In the ensuing dissertation there is no design to discuss principles, practices or agents, farther, nor in any other direction than will illustrate the main object; and if the legitimate interpretation of the language used carries the reader beyond this, it will do what the writer is studiously anxious to avoid.

DISSERTATION.

"In no class of human events is the reasoning of '*post hoc propter hoc*,' so commonly applied, by the world at large, as in what relates to the symptoms and treatment of disease. In none is this judgment so frequently both erroneous and prejudicial." HOLLAND.

To answer the question propounded for a dissertation, accurately and with such perspicuity that all candid and unprejudiced professional minds should recognize the answer as truth, is of prime importance: its accomplishment would mark the beginning of the epoch of perfection in medicine.

In the study of this subject, it will, perhaps, be best to present it, first, in its relations to

BIOLOGY.

In approaching this part of the task, it will be well to lay down some postulates, which shall have the force of axioms in guiding our investigations and in controlling our conclusions.

1. Every class of vitalized matter is the subject of a natural law, peculiar to itself, which maintains its class identity.

2. In the human family, this law determines that in the development of an impregnated ovum, the educt shall be a man and not an ape, an elephant, or any other animal.

3. By this law man's stature at maturity averages, perhaps, 5.6 ft., but his normal height may vary from 4.8 ft. to 6.4 ft. His weight averages 140 lbs., but weight may normally range from 80 lbs. to 250 lbs.

4. Man has a period of growth, maturity and decline, and is not a constant quantity at either period. There is no closer relative approximation to unity in stature or weight, during growth or decline, than there is at maturity.

5. While, therefore, the law of reproduction in man, as to kind is imperative, considerable latitude is allowed in the details of the fulfilment of that law; and this latitude extends to all parts of man—two men of equal stature may not have equal weight, nor equal length of limbs, nor equal development of viscera, nor equal functions, either corporeal or psychical.

6. This inexorable law of reproduction and latitudinous development of individuals under it, is not peculiar to the human family, nor even to animated existences; it runs through all organic nature, sometimes more restricted, sometimes more amplified. Cats will produce cats, but the members of this domestic branch of the feline family will vary in size, color and disposition. Six seeds of an apple will produce six apple trees, but they will be diverse in size and shape, and the appearance and flavor of their fruit, but not one of them will bear a plum, a walnut, or an acorn.

7. Accepting these statements as great truths in nature, we must not fail to recognize, that accident or design may interfere to make still greater variety in the development of vitalized organisms. Tom Thumb, 28 inches high and weighing 45 lbs., and the so-called Scotch giant, 7.6 ft. high, and weighing nearly 600 lbs., are wide departures from the standard of normal physical development in man, from accidental causes; and the American idiots, so long exhibited to the public under the name of the Aztec children, are examples of accidental psychical abnormities.

Whole classes of people produce distortions by voluntary efforts. A tribe of North American Indians have flattened sinciputs consequent upon compression in infancy. Some of the Chinese have feet scarcely a tithe of the natural dimensions, produced by an arrest of development in infancy by intentional compression. The Jews are still looking for the advent of the Messiah, by virtue of an education running through all the generations of Israel.

8. We see, therefore, that large variations in the results of the operations of nature's law are effected by impediments to its operation in the ordinary channel, and these impediments may be voluntary or uncontrollable, patent or impenetrable.

It is important to remember, however, that the results, such as given above, are only accomplished by the consumption of much time in the application of the impediment to normal developement. An Indian cannot alter the shape of his father's skull, nor can he permanently flatten the head of his child by a few minutes' pressure, nor by hammering it as he would a lump of lead. He must keep the compressing board in service until, in the process of nutrition, the bones of the cranium have all their tissues organized to the abnormal figure. The Chinese cannot take an adult human foot and compress it to one tenth its existing dimensions, nor shave it down as they would a piece of wood, nor chip it off as a block of stone. They must take it when it is small, in infancy, and arrest its development by such carefully adjusted envelopes as will retard its growth without destroying its vitality.

Psychical abnormities are produced also by the aid of time. No Moslem may be filled with the doctrines of the Hebrews by the most earnest reasoning of an hour's duration; but if a Mahomedan neonatus shall be reared in a Jewish family, the religious conclusions of its mature years

will be the abiding faith of its foster parents and their ancestors.

These postulates, besides establishing certain truths for further future purposes, allow us to draw the following corallary; that when a surgeon has distorted members of the body to restore, nature and time must be his chief reliance, and his appliances, whatever they may be, only serve to guide and encourage the physiological forces.

PHYSIOLOGY.

Our next proper inquiry is into the functional activity of the human system, and this cannot well be understood except as we glance, in connexion therewith, at the structure and development of the body, both as a whole and in detail.

The body consists of members, apparatus, organs, tissues, and proximate principles. Each of its parts has reached the position it occupies, and attained the development it presents, in obedience to the great natural law especially governing its organization. But this body does not have any activity *per se*. Physical organizations are not endowed with activity, but with a *capability* of activity, which must be excited by a stimulant* before there can be any dynamic phenomena.

Let there be no misapprehension of this point, for it is the paramount idea in pathology as well as in physiology, and without a clear conception of it in the latter, its importance in the former will not be maintained. To repeat—an organization is not active by virtue of its organization, it is only capable of action when prompted thereto by a stimulant that calls out this capability, and this is true of the body as a whole, and in all its parts, even to each ultimate "vital unity;" and farther, this activity is continued so long as the stimu-

* The general term *stimulant* is used here and throughout the biological part of this dissertation, in its comprehensive signification, meaning anything that excites activity.

lant is operative, and no longer. In this particular the human body may be likened to a great manufacturing establishment:—on Sunday the machinery is all in place and quiet, but ready for activity; on Monday a fire is kindled under the boiler, and presently the whole establishment is resonant with the hum of machinery in motion. The difference between the two, in part, is, that the human body has no Sunday, and in the origin and manner of application of the stimulant. Take a man at any given period of his existence, and he has been brought to that point by an active vitality, and he is equally ready to be carried farther by a continued active vitality, but this activity does not pertain to his organization *per se*, it is the result of a stimulant applied to his organic structure, and the stimulant must be continued or activity will cease.

Proper stimulation is not a single phase of force; the stimulant is different for different organs; even for the same organ it is not always identical; and for the multiform stages of existence it is varied to suit the condition. All that appears to be required to stimulate the fecundated egg to vital activity is an adequate degree of warmth maintained for a sufficient time. Certainly this is true in birds, and analogy convinces that it is the same in man. Having reference to birds, warmth, continued within certain narrow limits, will cause the segmentation of the vitellus; the formation of the blastodermic membrane and its division into an external and an internal membrane. From these proceed the orderly development of one tissue and organ after another, until the age and state is attained when the new being is extruded from its fœtal surroundings, and taking food through its buccal orifice, digests it in its internal organs and maintains its own animal heat. During the period of incubation the heat supplied to the embryo must be maintained comparatively close to a central degree, for if it

rise above the maximum, or fall below the minimum, at any stage, vital activity would be destroyed, and no re-application of the proper degree of heat, nor any other means, could re-establish it.

Caloric is essential to the development of the fœtus, but it is not all that is essential. Nutrition must be furnished, and this is prepared and presented by the maternal parent, involuntarily and unconsciously, under the law of her being, and is absorbed through the membranes of the fœtus. After birth the food is taken into the interior through the mouth, is there dissolved, and is absorbed through the membrane of the alimentary canal into the circulation, and then distributed to all parts of the system.

The instinct of hunger stimulates to the taking of food; food stimulates to its solution in the digestive tube; and the solution stimulates to its own absorption: then, through a series of actions, reactions, and associations, all vital activities are maintained; and the energy of vital action within natural limits is proportioned to the amount of stimulation.

In the protozoa, the medium in which they live, and which is at the same time the bearer of their food, is, with caloric, the sufficient stimulant to excite their full activity; but as we rise in the scale of animal organization, the affair becomes more hidden from observation, and is soon lost to view except in its results.

At least three kinds of activity must be recognized in man: namely, a functional activity, as when a muscle contracts; a structural activity, as when a part simply maintains its structural integrity; and a developmental activity, as when a part increases the number or size of its elements. So intimate is the relation among these activities that frequently they are inseparable, and doubtless they are sometimes correlative.

The stimulant necessary to excite these several activities

varies, and in so complex an organization as that of man, where the resultant of the activity of one organ is often the stimulant to action in another, and where the nervous system comes in to complicate the subject by making a stimulant that impinges at one point, operative at another and remote point, the whole affair becomes exceedingly intricate, and too profound for full elucidation with our present knowledge. For the purpose we aim at, the idea that must be made clearly manifest and kept constantly in view is, that a vital organism is not of itself active, and not endowed with activity, but with a capability of activity under appropriate stimulation; and that such activity continues as long as the influence of that stimulant is maintained, and no longer. This is the grand, central, fundamental idea of physiology, and without its broad and distinct recognition we cannot take a single satisfactory step in the domain of biology.

A man, then, consists of a mass of organized, vitalized matter, having a certain form; made up of a certain arrangement of members; constituted of certain tissues, organs and apparatus; and these composed of "vital unities" or "proximate principles," each endowed with a capability of activity by the allwise Creator in the beginning; and this capability of activity constantly operative under the stimulation of a force also ordained to the purpose by the Creator. The sum of these activities constitutes the phenomena of human life. Human life is never a static, nor a constant quantity. That "nature abhors a vacuum" is an old scientific adage; we might originate another—nature abhors rest. Nothing in nature has absolute rest, so far as we know. Motion, ceaseless motion, is the universal law of all things of which we have cognizance. Man's organization is constantly changing, in some parts more rapidly, in others more slowly, but still always changing, even from before conception until after death.

An adult man consumes an amount of nutrient material equal to the weight of his body in about twenty-seven days *(Dalton)*, and consequently the complete metamorphosis of all his tissues must take place in periods, the average of which is twenty-seven days. But the blood and other of the more plastic and more active tissues change very rapidly, while the cartilages and other firm and slightly yielding tissues occupy much time in their physiological molecular changes.

Not only is the molecular metamorphosis ceaselessly going on, but the tissues have a life to live and a time to perish in, shorter or longer according to the nature of the tissue, and as the period of observation is closer or more remote from the date of conception: the umbilical vesicle as a medium of nutrition is supplanted early in embryonic life by the more elaborate placenta, and this in turn gives way to another method at the conclusion of parturition. The deciduous teeth come and go in the early years of independent life; and as old age creeps on, one organ after another arrives at that stage of its existence when its functions are so imperfectly performed, that they cannot do their duty in the general life of the body, and somatic death ensues.

Before closing this section, reference must be made to the influence that mental processes exercise over physiological functions. That such influence is powerful and persistent, even in the modification of nutrition and development, must be obvious to any one who contrasts the actions and appearance of an affluent, educated man, with the illiterate navvy who only delves and eats. To fulfil the needs of our present study, this allusion to physiological stimulants will suffice.

PATHOLOGY.

If the foregoing broad and comprehensive statements convey the great and fundamental truths of general physi-

ology, then we shall have but little difficulty in understanding, in an equally broad and comprehensive sense, the essential features of general pathology.

Beside the normal stimulant that calls forth normal or physiological activity, constituting health, an abnormal stimulant may be applied to a part and cause an abnormal activity, producing abnormal or pathological results. This is known as disease, and this may pertain to either or both of the activities of function and development, already mentioned. But in the case of development, instead of producing an increase in the number or size of the proximate constituents of the part affected, it establishes a decrease; or more commonly the direction of its activity is perverted, and products abnormal in constitution, time, or locality, are the result.

Pathological stimulants in their nature, source, and mode of application are as profound, intricate and difficult of observation as physiological stimulants. They are sometimes of external and sometimes of internal origin, and quite frequently the resultant of diseased action in one part is the excitor of diseased action in another. In such case the pathological stimulant passes through the same channels, and is carried by the same agencies provided for, and used by, physiological stimulants. The nervous system is as ready to transmit pathological as physiological stimulants, the excitor impinging upon one point and the excitement showing itself at a remote point.

Furthermore, many things that in one quantity would be a physiological stimulant, would in another quantity be a pathological stimulant. For examples:—let a man drink half a pint of water and it will serve a normal purpose in his economy; but let him drink half a gallon and it will prove an emetic or a stimulant to some other abnormal activity: let a man eat six ounces of beef and it will prove a healthful

nutrient, but let him eat six pounds of the same and it will act as an excitor of disease. Let a man, unaccustomed to manual labor, chop wood earnestly for a few hours, and his hands will be blistered; but let him apply the same friction of the axe helve gently and slowly, and in a few months his palmar cuticle will acquire several fold its former thickness and be almost as insensitive as leather.

It has already been shown that physiological activity is allowed considerable latitude for its operations, and we have just seen that pathological activity is but a diminution, an excess or a distortion of the former. Hence we easily deduce the fact, that physiological activity may shade off into pathological activity in such manner that the most acute observer will not be able to say where the one ends or the other begins.

Pathological activity does not continue of its own force, but is maintained only by the persistent application of a stimulant that compels the part, as it were, to violate the physiological law; and as soon as the unnatural stimulant is withdrawn, the physiological activity is resumed as before, or as nearly so as the altered structure will admit.

If a pathological stimulant be so powerful, or so long continued, as to induce activity beyond physiological restraint or recuperation, the affected part loses its vitality and is no longer under any biological law, but is controlled by the ordinary affinities of inanimate matter.

The initial point, then, of all abnormal function and structure is the influence of an unnatural stimulant upon the vital units of the tissue or organ affected. The particular nature of the departure from health that may ensue depends upon the nature of the stimulant, the structure and condition of the part stimulated, and other circumstances of accidental association. In the great majority of internal diseases, the exciting causes are shut out from our knowledge. We use

certain conventional terms which, by common consent, signalize something that produces recognized results, but convey no definite idea of what that something is, or how it acts. We say often that cold produces pneumonia, but it is something more than the absence of caloric, for according to the United States mortality census, District No. 1, composed of New England and New York, has a mean winter temperature of 22.96°, with one death from pneumonia in every 12,873 inhabitants; while in District No. 8, composed of the four South Western States, the mean winter temperature was 53.10,° and the deaths from pneumonia equal one in every 3,250 of inhabitants. Telluric miasmata produce intermittent fever; but what is a miasm? The virus of a rabid dog will create a hydrophobia; but what is the virus of rabies canina? The effluvia from one suffering from measles will communicate the disease to another who has a liability; but what is the effluvia of measles? If the kidneys fail to excrete the urea a train of morbid symptoms ensues, due to an excess of urea in the system; if the liver do not eliminate the cholesterine, a disease known as cholesteremia will follow. Each of these excrementitious matters acts in the blood the rôle of a pathological stimulant to certain tissues, and brings on its respective disease; but what was the morbid stimulant that disordered the kidneys and liver, and arrested their legitimate service?

When we find gummata in an infant six years old, we know that it is the victim of the syphilitic poison, and has been, for months at least, most likely for years; but where was the primary sore? on the infant, on the mother, or on the father? and how many phases has the virus assumed between the chancre and this tertiary manifestation of its continuance? Here, plainly enough, is an instance where the resultant of diseased activity in one tissue has become the stimulant that excited disease in another tissue.

Traumatic diseases have their causes more open to recognition. If incandescent iron come into contact with the skin we know the cause of the ulcer that ensues. If, by a blow upon the head with a club, a man be knocked senseless, we know the cause of the concussion that oppresses him. If a man have his limb crushed under the moving wheel of a railroad car, we understand very well the cause of the gangrene which follows.

Neither must we overlook nor underrate the mental states as pathological stimulants. One cannot read the classic work of Montgomery *(Signs and Symp. of Preg.)*, without being convinced that the mental state of the mother may distemper the physical formation of the fœtus in her womb. Bennett tells us that in Edinburgh a "man on trying to hook up a heavy piece of meat above his head, slipped, and the sharp hook penetrated his arm, so that he himself was suspended. On being examined, he was pale, almost pulseless, and expressed himself as suffering acute agony. The arm could not be moved without causing excessive pain, and in cutting off the sleeve he frequently cried out, yet when the arm was exposed it was found to be quite uninjured, the hook having traversed only the sleeve of his coat." "A woman was supposed to have poisoned her newly-born infant. The coffin was exhumed, and the procurator-fiscal, who attended with the medical men to examine the body, declared that he already perceived the odor of decomposition, which made him feel faint, and in consequence he withdrew. But, on opening the coffin, it was found to be empty, and it was afterwards ascertained that no child had been born, and consequently no murder committed. Numerous instances might be given of individuals engaged in duels, or on other occasions, who have supposed themselves to be wounded, and have fallen down as if dead, without having received the slightest injury." The experience of every practitioner will

give him cases where great sorrow, or sudden grief, brought him patients with bodily ailments most difficult to heal; and most of us can recall instances where sudden joy has proved the stroke of death. Every reader's memory will enable him to review a host of such instances as have been recited, or even more striking ones, for medical literature, whether ancient, mediæval or modern, is dotted over with illustrative narratives of this tenor.

THERAPEUTICS.

"Remedies do not act upon dead bodies."

There is a world of wisdom in this maxim of Cullen's, and, constantly remembered, it would prevent a continent of errors, and an ocean of mischief. It should be the starting point for every student who sets out to acquire the science and art of treating disease; over every chair from which therapeutics is taught, it should be inscribed in attractive and legible letters; and it should be a necessary imprimatur to every text-book upon the same subject.

The therapeutist must, therefore, have a living body to exercise his skill upon; and not only this, but he must have a diseased one. Etymologically, therapeutics signifies the art of curing, healing, and this must be its practical definition likewise. Prophylactics is the art of maintaining health or preventing disease, and however intimate these two branches of medicine may be, we must not lose sight of the distinction between them.

A physician, being consulted by a party, his first point is to ascertain whether the party is diseased (for certainly he is alive). Here the physician should be careful to discriminate between the great latitude in physiological activity and its results, and actual pathological activity and its results. It would not do to consider the Scotch giant a case of pathological hypertrophy, and undertake to reduce him

by medication to the average standard of human weight and stature. It would be equally mischievous to regard Tom Thumb as an instance of faulty assimilation, and endeavor to force his nutrition until he attained the dimensions of average man.

When a man is recognized as sick, the question generally propounded by the physician to himself is—what medicine shall the invalid take? Whereas it should be—does he need to take any medicine? To answer this question aright, presupposes a perfect acquaintance, not with the name merely, but with the nature and course of disease, and with the force and virtue of remedies. That our acquaintance with these particulars is not perfect, but on the contrary lamentably deficient, is as patent as the noon-day sun.

At the recent opening ceremonies of the Clinical Society in London, the venerable and eminent Sir Thomas Watson said, "Certainly the greatest gap in the science of medicine is to be found in its final and supreme stage—the stage of therapeutics." "We know tolerably well *what* it is we have to deal with, but we do not know so well, nor anything like so well, *how* to deal with it." "To me it has been a lifelong wonder how vaguely, how ignorantly, how rashly, drugs are often prescribed. We try this, and, not succeeding, we try that; and, baffled again, we try something else." "Our profession is continually fluctuating on a sea of doubts about questions of the gravest importance." "Of Therapeutics, as a trustworthy science, it is certain that we have as yet only the expectation." Now if Sir Thomas Watson—a man who has had, perhaps, near half a century of close and thoughtful observation, of acknowledged eminence as a practitioner, a teacher and an author—bears this testimony to the status of therapeutics in the year 1868, before the élite of the profession in London, shall we not receive it as conclusive, that much of the teaching in this department of medicine from

the professors in our colleges, from the text books in our libraries, and from the overflowing of our abundant periodical literature, should be taken, not as fixed scientific truth, but at least *cum grano salis*?

This vacillation spoken of by Sir Thomas, this jumping from one remedy, if the patient does not quickly improve, to another, and another, is the joint offspring of the error so prevalent, already mentioned, that an ailing man must always take medicine; and another equally popular mistake, that every disorder might be cured by drugs if we could only hit on the right ones. Practitioners with these notions ignore the fact that most of human diseases tend toward spontaneous recovery, and count as nothing the unaided efforts of nature. But with the light and knowledge we now possess of pathological activity, and with the uncertainty that overhangs the action of medicines, we ought to lay it down as a guiding maxim, that *all disease should be left to the hazard of nature where art cannot establish an indefeasible right to interfere.*

Too many active therapeutists are careless of the disturbance made by potent medicines. Such disturbance is never a matter of indifference. If it is not curative, it must necessarily be detrimental. Perhaps it was Abercrombie who compared a physician, heroic in the administration of medicine, to a courageous man who went in the night to assist a neighbor who was grappling with a burglar. Entering a dark room where the two men were scuffling, he laid about him with a club, breaking the first head he struck, fully hoping and expecting it would be the burglar's, but, unfortunately for his good intentions, just as likely to be that of his friend.

Medicines which would create disease if given to a man in a normal physiological state, should be withheld from a sick man, except upon indubitable evidence that they will

act beneficially. Otherwise they may continue morbid activity, after nature and time have cured the original disease despite them. Indeed all therapeutists should have still an additional maxim, viz.: *All perturbating medicines are, themselves, pathological stimulants.* This would teach that the administration of such agents is always an evil, and never to be voluntarily incurred except under a certainty of abating a greater evil.

But let us proceed to examine therapeutics philosophically, in the light of our recent biological studies. And as a proem thereto, it may not be amiss to state, by way of reminder, what every intelligent physician is fully conscious of, viz., that disease is not an entity—a something tangible —supplanting, or overpowering another entity, called health, and reigning in its stead; but a condition, a new order of phenomena in the part diseased, differing from the healthy phenomena of the same part by virtue of its vital forces taking a new direction, under the impulse of an excitor of unnatural attributes.

If it be true that pathological activity ceases to progress as soon as the exciting cause is removed, then it is clear that to cure disease we have but to remove the cause. In some traumatic diseases this is done with success. If a thorn be driven into the flesh and immediately removed, nature will restore the continuity, as soon as her means have time to act.

But generally the cause of disease is unknown, and we have no opportunity to remove it; and with equal frequency we only know that a cause has been operative, when we find its effects at a stage of its progress remote from the initial point. A physician may be called to see a patient with such violent pyrexia that he watches it with anxiety until, on the third day, he observes a cutaneous eruption making its appearance, when he knows that he has a case of variola, and that his patient was exposed to the effluvia of some other

person having variola twelve days before; or had some of the virus inserted into his system seven days before the manifestation of morbid symptoms. All that time the cause had been doing its perfect work in the victim's organization, entirely concealed from observation, and it is only known when no possibility of removal exists.

So of your neighbor whom you find sick of cholera, and learn that he has just ended a journey of a thousand miles since he was in a region where cholera prevailed. You feel that the seeds of the disease were planted at or before the beginning of the journey, to germinate unseen and unfelt during the travel, and to blossom and fructify at its termination, presenting no opening for dealing with its cause.

In the instance of cholera, even if we knew the cause had a productive lodgment in a man's system, we have no means of arresting its development; and in variola we could only succeed in stopping its manifestation, by making use of nature and time to supersede it with vaccinia.

Unfortunately, then, we have but little opportuuity to cure disease by removal of its cause; and when we do so, it is, for the most part, through sanitary and hygienic measures having nature and time for their chief efficient factors.

Generally, therefore, we are summoned to prescribe for disease after it has gone through the stage of incubation, and is made manifest to our physical senses by its grosser symptoms. What can we do to cure it?

A very important class of human disorders all acknowledge we have nothing available to cure. The disturbance must prove mortal, and our whole attention is addressed to mollifying the suffering. Hydrophobia may be presented as a paradigm of this class.

Another class, now large and constantly increasing, consists of diseases having a recognized definite course to run that may not be curtailed by any known process. Some of

this class are but a slight departure from health, a mere unwellness, as varicella. Others are of very serious import, often causing great mortality, especially in the character of epidemics. Variola may be cited as an example of this variety. Before the time of Sydenham variola was treated actively, under a distorted phase of the ancient coction and crisis theory, and the results were most disastrous to life, as well as the cause of terrible suffering while the victim was alive. Now the cure is entrusted entirely to nature and time, and whatever medication is resorted to, it is with the sole idea of ameliorating the symptoms, and mitigating the severity of the sequelæ.

With fevers as a class, we are learning to meddle less and less. For intermittent, and a certain form of remittent fever, it is true we have a specific, and it is the only specific in the whole range of medicine. A quarter of a century ago it was deemed necessary to prepare the system by bleeding, emetics, cathartics, &c., for the administration of the cinchona or its salt. At present physicians use few or no preparatory measures. In regions where malarial fevers most abound, the people keep by them and prescribe quinia, without consulting the doctor, neither do they institute any domestic measures of preparation, trusting to nature and time, successfully, for what is not done by the great antiperiodic.

Typhus and typhoid fevers are now classed among the self-limited diseases, and no efforts are made to arrest them by the most enlightened physicians; but they are managed through their natural career with no other effort than to assist nature and time in bringing about a favorable termination. Nevertheless there are practitioners who hope to cure such fevers with drugs, and one cannot read the treatment of them with alterants, with counter-irritants, with opiates, with stimulants, with mineral acid juleps, with milk, and with divers other articles as leading medicaments, with-

out being forced to the conviction, that the course of the disease is in no wise altered for the better except by such articles and such management as assist nature in bearing up, supporting and nourishing the system, until the pathological condition finishes its career under its own law of existence.

In the phlegmasiæ we have a class of diseases which have been supposed to make the most urgent demand for therapeutic interference. The word inflammation implies a fire, and the theory was, it must be smothered, quenched, stamped out, the sooner the better, as you would suppress a rising conflagration in your house. Can this be done? Let us inquire what inflammation is, before we essay an answer to this query.

For our present purpose it is not material whether we adopt the pathology of inflammation so beautifully presented by Paget; or that originated by Bennett; or that derived from the writings of Virchow, or as modified by the views of Robin, or the cellular theory of Beale. In either case the inflammatory genesis is a local disturbance of the nutrition of the part affected, so occult as to be discernible only by the aid of a great magnifying power, and it has advanced through all its primary stages before it advertises itself to the ordinary senses of the medical observer. Inflammation now is an accomplished fact, and of course cannot be arrested. Whatever power medication can exert would be available only to confine the inflammation to its present limits. This could be done, undoubtedly, if we could remove the pathological stimulant that is exciting the mischief. If a thorn have penetrated the flesh and is left there, it will excite inflammation, in the suppuration of which it will be loosened and flow away in the débris of the disease, and the disturbed tissues will speedily regain their normal condition and functions. If the thorn be withdrawn by art, at any stage of the process, the diseased activity will cease to progress, as it did

when the thorn was removed by the natural process, and restoration will begin; but no interference whatever will arrest the inflammation until the thorn is removed or ceases to act as a pathological stimulant.

But in internal inflammations we do not know what the pathological stimulant is; and if we did, in most instances it would probably be beyond reach. Internal inflammations are not of traumatic origin, and often, at least, are excited in one part through the mysterious agency of the nervous system by a pathological stimulant applied to another part; as when humid cold comes in contact with feet accustomed to dry warmth, there will follow a cynanche within twelve to forty-eight hours. Of course there can be no removal of the cause in a case of this kind. And, moreover, there is fair ground to suppose inflammations of this character partake of the nature of self-limited diseases, which have a definite order of phenomena to pass through, that can neither be arrested nor abridged.

It is not within the purview of this dissertation to seek largely into the uncertain proof of numerical statistics for support, but it may not be improper, in this connection, to adduce something in relation to a single point, from the stores so largely accumulated by the late controversialists over the therapeutics of pneumonia.

The average natural duration of uncomplicated pneumonia is about fourteen days, but it varies probably from five to twenty-eight days. And in this variation is found the great difference between many of the specific diseases and common inflammation. An inflammation of the lung may involve but a small portion of one lobe and run its course in five days, or it may spread over an entire lung and occupy four weeks in its progressive development and decline; while an uncomplicated rubeola will consume four days with its initiatory fever, and four more with its rubeoloid eruption to

the beginning of convalescence. Here then clearly is a distinction between measles and inflammation of the lungs. In the former, the whole system is involved in the same pathological movement, at nearly the same moment, and for about the same period; while the latter, beginning at a point, may be confined to that point, or may spread over an indefinite space, the pathological activity at the starting place having passed its maturity, and be on the decline before the remotest point that is to become involved loses its physiological integrity. If this position be well taken—and its truth is probably clear to the apprehension of every biological student—much of the doubt and uncertainty that hang over the therapeutics of the phlegmasiæ ought to be dissipated by the light it reflects on the natural progress and termination of these disorders. The cause of this contrast in the two pathological activities is to be sought for in the operation of that triune biological law, which teaches, that all pathological activity is the result of a pathological stimulant, coequal with its application and coeval with its duration.

The aim of this paper does not admit a farther pursuit of this topic, nor an inquiry into the kindred subject of the diverse natures of many of the plegmasiæ. For example, rheumatism and white swelling are both inflammations; but how different! Croup and tonsillitis are both inflammations; but how unlike!

From the foregoing we deduce this corollary:—*that when a part is inflamed we have no power to jugulate the disease; all we can do with medicaments is to conduct it to a safe termination, through assisting a natural process by the aid of time.* And if we have the ability to arrest the spread of inflammation, it is done by virtue of our suppressing the pathological stimulant, or by raising the depressed vital power of the part threatened, to a degree that will enable it to resist the morbid stimulant.

If there be such a disease as a mere exaltation or diminution of the function of an organ, without being dependent on change of structure, and that organ is one to which we can directly apply medicine, we might possibly accomplish a cure with our remedy *per se*. But have we such condition of any organ? Let us suppose, for argument, there may be an error of function without structural change; to what organ can we directly apply our remedy? If it be the kidneys that are in error, we can only reach them through the circulation; if the liver, the same, and thus we appeal to both nature and time. Common diarrhœa might, at first sight, seem to fulfil the condition of the premises, but diarrhœa is composed of at least two pathological factors, viz.: increased secretion by the intestinal secernents, and an increase in the peristaltic action of the muscular tissue of the bowel; and when we give medicine by the stomach it is either absorbed and reaches the seat of disease by the circulation, or passing over the face of the mucous membrane, flows by the mouths of the secernents—not into them—and produces its good effects through reflex action of the wondrous nervous system. Even then, in the so-called functional disorders, the therapeutist can do nothing except as he appeals to nature and waits upon time.

Diversity in therapeutics affords another stand-point from which to view our subject. An example or two will suffice.

Stillé's Therapeutics and Materia Medica is a representative work, a monument of erudite literary investigation and faithful labor. Turning to his index of "Diseases and their Remedies," we find that under the head of rheumatism he gives the following catalogue of remedies for that disease: "Sodæ carbonas, sabina, cantharis, cinchona, liquor ammoniæ, capsicum, pix abietis, sabina, oleum monarda punctatæ, oleum anthemedis, eupatorium, monarda, calor, creasotum, oleum terebinthinæ, ammoniæ carbonas, opium, stramonium,

humulus, dulcamara, succinum, camphora, frigus, veratrum viride, aconitum, tabacum, veratria, antimonii et potassæ tartras, sulphur, cimicifuga, pulvis ipecacuanhæ et opii, guaiacum, potassæ nitras, potassæ acetas, ammoniæ phosphas, chimaphila, colchicum, hydrargyrum, arsenicum, iodinum, oleum morrhuæ." Of these, sabina is twice mentioned. Correcting this, it leaves forty medicines for rheumatism, and a glance of the eye will show that the list does not include bleeding, the various purgatives, warm water, vapor and hot air baths, lemon juice, lamb's wool, carded cotton, and a few others among the standard remedies, to say nothing of that host of drugs which have, individually, one or more enthusiastic advocates, who assure us that they have had ample clinical experience that their favorite is, under all ordinary circumstances, a specific. Beside all these, there are eclectics, homœopathists, hydropathists and other medicasters who treat rheumatism by other methods, and yet the patients of all recover in about the same proportion and in nearly the same time, so far as we can judge from the statistics presented.

Can a logical mind come to any other conclusion than that nature and time cure rheumatism, whether the patient have any *medical* attendance or not, provided he has appropriate nursing attendance? Notwithstanding the valuable labors of Fuller, Garrod and others, we are still in possession of nothing that militates against either the wisdom or the wit of the London surgeon, who on being asked by a junior "what would cure rheumatism," replied, "six weeks."

Is some one ready to say that rheumatism is a unique pathological condition, protracted in its course and naturally tending to recuperation, and, therefore, not suited to be a test of our therapeutic skill. He might be answered that such are just the conditions affording the very best opportunity for a successful application of our means of cure. But

not to take advantage of this fact, let us turn to a disease rapid in its course, often fatal in its result, and, from its recent visitation over the civilized world, fresh in the memory of all—epidemic cholera.

During the years 1865, '66, '67, foreign and domestic professional literature, monographic and periodical, has teemed with the treatment of cholera. For the obvious reason that the ground is too extensive to be gone over in this connection, no attempt will be made to rehearse the almost countless methods of treatment that have been reported; but the attentive student cannot fail to observe, that they have been of the most diverse character, and not infrequently diametrically antagonistic. Nevertheless, whenever there has been unusually small or great mortality, research has shown that the result was not attributable to the activity of the treatment, nor the want of it, but to certain extraneous conditions having little or no relation to either. The lessons to be gathered from the recent visitation of cholera are these: that physicians have not been able to settle upon a definite treatment of cholera in any of its stages; that after the disease is fully developed, no treatment has been of much avail for good, and that prophylaxis through hygienic and sanitary measures is of vastly more importance than therapeusis through drugs and medicaments.

Cholera, therefore, as well as rheumatism, helps to bring us to the decision that nature and time are the prime agents to cure disease, while physicians are but the helpmen to assist the process when opportunity opens the way. These examples will serve to illustrate the point involved, and no value will come of pursuing the line of argument further.

MATERIA MEDICA.

Turning from the contemplation of diseases and their multifarious treatment, let us consider for a space the

remedies themselves and their application, and determine whether the conclusions it leads to are in unison with those already attained.

The primary list of U. S. Pharmacopœia embraces over three hundred drugs, the secondary about seventy-five drugs, and the preparations number about five hundred, making an aggregate of nearly nine hundred officinal articles. The medical virtues of all these and their therapeutic application are duly chronicled in our text-books and proclaimed by our college teachers, but in nearly all instances from the erroneous stand-point that regards diseased activity as something to be taken out of nature's hands and be made subject only to the controlling power of medicaments.

Inferentially, if not positively, every student of medicine is indoctrinated with the idea that medicines are to be his sole reliance in combating all serious disease; that pathological activity is nature off the track, running wild, and that she will continue to go from bad to worse, until wreck and ruin are the result, if he does not check her in her evil course, and restore her to, and keep her in, her normal way, by the superior force of his remedies. This error has not seized upon physicians only, but the wrong opinion has become almost universal among the people through the propagandism of medical men. It is in obedience to this mischievous education that ailing people are continually changing from one physician to another, from physicians to medicasters, and from these to the countless nostrums that line the shelves of every apothecary. When an invalid takes medicine and is not restored to health at once, his belief is that he did not have the right remedy, or not enough of it, and, nothing doubting, he recommences and continues until he recovers or ends his existence.

To such an extent does this practice prevail, leading to the consumption of such vast quantities of medicine—much

of it under the patient's own prescription for a supposed disease diagnosed under the instigation of groundless and vague apprehension; more of it under the delusion purposely thrown around him by the maker or vender of nostrums—that much mischief is done by the improper use of medicines; so much, indeed, that it overbalances the good arising from the proper administration of them, and authorizes one to say, without hazard of error, that the aggregate effect of all medication in the civilized world is the reverse of what is intended. And this will continue to be so until the profession fully realize the fact that nature and time are the main factors in the cure of disease, and that the use of medicaments is of secondary importance and must be strictly subservient thereto.

When the profession shall be filled with this faith, and proselyte the people to the same standard of belief, the day of the medicaster will have passed, the nostrum-maker's occupation be gone, and the physician will have no more cause to lament that every pretender who dubs himself doctor, and assumes the rôle of prescribing medicines, shall be esteemed a physician by the community.

A brief review of two leading classes of medicines, and of two important individual remedies outside of these classes, will serve to illustrate the whole range of medicaments.

Cathartics.—"Purgatives," says Stillé, "continue to be regarded by the vulgar as the most efficient of all remedies. This partiality arises, in some degree, from the prejudice which the coarse and ignorant have in favor of whatever is vigorous or even rude in its action, but, it must be confessed, from the unquestionable relief also which cathartic medicines afford in many of the ailments of this class of persons, whom the habitual use of coarse food, as well as the neglect of personal cleanliness and of the calls of nature, render peculiarly apt to be benefited by purgatives and depurative

agents." "The evacuant method," says Hufeland, "has outlived all medical fashions and hypotheses, and we may with truth declare that in a great number of cases the intestinal canal is the field of battle upon which the issue of the most important diseases is determined."

Medicines of no other class are, or have been, so constantly used as cathartics, but fewer of the drastic variety are now prescribed than formerly. These evacuants, however, have not had an uninterrupted popularity from the beginning. Hippocrates inculcates caution in their use in fevers, and the methodic sect among the ancients discarded them. Galen, Celsus, and Sydenham, like the "old man of Cos," insisted on moderation, while Hoffman wrote an essay "on the propriety of rejecting them entirely from the materia medica." Rush was a warm advocate for cathartics in yellow fever, while Hamilton magnified their therapeutic importance to the highest.

At present, although not so freely used by the people as they were a decade ago, they are still popular, while, on the other hand, a prominent class of medicasters proscribe them altogether. Physicians hold very different opinions and practice about cathartics. Some, adhering to the ancient ideas of the virtue of drastics, give them with great freedom, while others confine their prescriptions to the mildest laxatives or the simplest enemata for general purposes.

This abundant variety in the past and present status of cathartics carries as irresistibly to the conclusion, that they are not an essential element in the general management of disease; that something else is the primary agent, and they are but auxiliary.

Emetics.—Another important class of remedies of long time renown is emetics. Stillé says, "Emetics, or medicines given to produce vomiting, are among the most anciently, the most universally, and the most constantly employed of

all remedial agents." "At the commencement of every disease, whether idiopathic or symptomatic, its material elements are mobile, and may be readily dispersed by a prompt and energetic movement. Like the particles of a saline substance in solution, if allowed to repose they speedily crystallize in a solid and permanent form, when a little agitation of the liquid would have effectually prevented the result." Although a broader or more mischievous pathological and therapeutical error could scarcely be compassed in as many words as this last quotation, it must be accepted as a general exposition of the views of a large and learned proportion of the fraternity of medicine.

Notwithstanding the hypothetical necessity for emesis in disease, the practical application of emetics has not been constant, but widely fluctuating, and just now has fallen into desuetude, except for special purposes. This is acknowledged by Stillé, who says, in speaking of natural vomiting in the early stages of acute internal disease, that it has "always been regarded as one of the most important indications for the guidance of the physician, and it cannot be doubted that the emetic treatment derived from it will again acquire the credit which it once of right possessed."

However this may be, the fact that their estimated value and practical use vacillated between wide extremes, and that they are now but sparsely administered by physicians, is enough for our present lesson; and if to this we add that emetics like cathartics are utterly discarded by a large and influential class of medicasters, we cannot fail to see that at best, emetics, as remedial agents, can only be adjuvants to the more constant and more important power of nature and time.

These two classes of medicaments, cathartics and emetics, have been selected as paradigms for all the classes of the materia medica, because they have had a more ancient stand-

ing, and a greater range of application, and are still looked upon as of leading importance. If the argument in their cases has established the point aimed at, we can by a parity of reasoning reach the same conclusion, more readily, in regard to every other class of remedies extant.

Bleeding.—Perhaps the first case of bleeding to cure disease was the daughter of the Carian King Damœtas, bled by Podalirius more than a thousand years before the Christian era; certainly bleeding long antedated the time of Hippocrates. Galen was an enormous bleeder. And since the first installation of bleeding it has never been abandoned by the profession, but various sects and medicasters have discarded it for a time. Van Helmont and some of his successors, on theoretical grounds about coction and crisis, utterly condemned it, and just now it has fallen into general disuse: by several classes of medicasters through mere opposition to scientific medicine; and by physicians themselves on theoretical grounds of improved biological knowledge, or on theoretical grounds of a change in the type of disease.

A quarter of a century ago a fluent author (Harrison) of a text book on Therapeutics and Materia Medica wrote of bleeding: "Experience has placed its brightest and most enduring signature on the great and varied beneficent results which arise from the use of sanguineous evacuations in morbid actions of a diversified character. Two of the most general and fatal generic divisions of disease are in an especial manner amenable to the curative power of this remedy. Fever and inflammation assume many forms, and in most of these forms bleeding, as a topical or general evacuant, is required." That was the prevailing professional sentiment at that time, and the guiding rule of practice. Sick people in that day got well of both fevers and inflammations. Now-a-days no one bleeds for any form of fever, and inflammations are treated by all classes of medicasters

without any kind of bleeding, and by most physicians with only limited topical bleeding, and many of them without even that, and yet now, as twenty-five years ago, patients recover from fever and inflammation, under all kinds of management. No question can, consequently, remain that bleeding, general or partial, is not essential to the restoration of the victims of these two classes of disease.

Most certainly, if, in all the revolving centuries through which the practice of bleeding has been fluctuating, its agency, or any degree of it, had been essential to the cure of disease of any character, it would have been recognized, and so remained. That pathological activity was arrested and the subject of it recovered his health whether bled or not, must be taken as conclusive testimony that something other than bleeding was the cause of recovery, and that bleeding, at best, could only have been opiferous.

Mercury.—Mercury is another of those powerful agents which has had many and violent oscillations of reputation among persons who practise, as well as among those who consume remedies, for the relief of illness.

Mercury was introduced into medicine about the close of the dark ages, and has maintained a position among the important remedies ever since. A third of a century ago it was exhibited in nearly all forms of disease by most physicians, and its virtues were lauded to the highest by many, as a very catholicon.

Now among the most acute physicians its employment is limited to a few specific purposes, while many do not prescribe it at all, and for years several leading classes of medicasters have pursued it with a hue-and-cry, until it is somewhat under the ban of popular prejudice. All this leads to the inevitable conclusion, that whatever the real merits of mercury may be, there is another something that abates diseased conditions, whether mercury be among the medicaments applied to, or not.

In the whole armament of the physician, no other remedy has had so much reputation as either bleeding or mercury, and if the attempt has been successful to show, that neither of them is at best other than a hand-maiden to the restorative powers of nature and time, it must be received as tantamount to having established the same status for every article and appliance that medical men use for the reëstablishment of the physiological state, when it has been lost from any cause.

Mental Influences.—Mental conditions have a marked power over the recovery of persons from a pathological state. All teachers inculcate this idea, and yet there can be no shadow of doubt that the great body of practitioners overlook, or disregard, the importance that should be attached to it. No reference is here intended to the insane, neither to those who labor under hysteria or hypochandriasis, but to the ordinary patients that are encountered in general practice.

Stähl was perhaps the originator of the idea of the controlling power of the mind over the functions of the body, but he saw as through a glass darkly; while we of to-day, who choose to avail ourselves of the knowledge within our reach, will find much of the obscurity of Stähl's age vanished and out of our way.

Presenting countless phases, and coming from unknown sources, the drift of a patient's thoughts will frequently determine whether he shall recover his health or succumb to the disease. A conviction of restoration, and faith in the means used to that end, will carry an ill man through what might, without these, prove his fatal sickness. No physician can be a successful or popular practitioner, no matter what science he may have compassed, or to what art he may have attained, if he lack the ability to inspire his patrons with faith in his therapeutic skill. Possessed of this, a man will outstrip those who are his peers in everything else, but lack

this; nay more, an inferior man imbued with this attribute will have the rank, standing and success with the populace, of the most gifted and accomplished.

Stillé says, "Sentiments of partiality or aversion, and indeed all preconceived ideas respecting the operation of medicines, in many instances, determine their effects. The cures of the charlatan, whether he be an itinerant vender of panaceas, or a smug exhibitor of mesmeric jugglery, and those of the self-deluded enthusiast confident in an imaginary power, are often real, and at times so wonderful as to pass with the populace for miraculous. The same power, honestly employed, is the secret of success of many physicians, who, inferior, perhaps, to others in knowledge of disease and the use of medicines, are superior to them in their ability to control the will of the patient, and inspire unquestioning faith in the remedies which they employ. Philosophy is never so unfitly introduced as at the bedside of the sick. By a judicious use of the patient's belief, not only may recognized medicines become the means of accomplishing purposes which they are physically incompetent to fulfil, but inert matter, imbued with faith, may produce important physical effects. Simple neutral substances, such as a few grains of salt, or bread pills, may induce vomiting or purging; some colored drops may assuage a violent nervous headache, excite diaphoresis, or promote sleep. In this connection, it is sufficient to refer to the salutary influence of cheerfulness and hope, and the depressing effects of a dull tone and despairing manner, not only on the comfort of the sick, and their progress toward health, but absolutely on the issue of their sickness."

Habershon gives this instance: "In a patient who had suffered from hemiplegia, and was in a nervous condition, but who could not be persuaded to discontinue medicine, two tablespoonfuls of spring water were followed by violent

purging, and when changed for a pill of bread the same effect was produced, and nothing could induce her to take another pill. She believed them to be powerfully aperient, and purging took place."

Plenty of such examples are to be found in the books, and the experience of every practitioner of a few year's standing, who has kept his eyes open, will furnish him others.

Every rational man knows, that so far as true homœopathic remedies have any physical effect whatever, it is accomplished entirely through the mental force of the patient; yet many sick persons get well who take only real homœopathic medicines, and this recovery must be ascribed to nature in some form—surely not to medicine.

As a further general illustration of the idea presented, reference may be made to the oft-recited fact in military surgery, that after a decisive battle the wounded men of the victorious army will recover faster, and from more serious injuries, than those of the defeated army, although they be subjected to the same treatment, and have the same sanitary and hygienic surroundings.

But enough, except that as a fitting close to this recital, allusion may be made to that poetical instance where Dr. Rush called back to fullest flame the flickering vital spark in a lady, who had been borne to the verge of life by typhus fever, to whose wandering senses he presented the talismanic shibboleth of "hawk's nest," which called up such inspiring reminiscences, associated with an object in the past, which, through the years of their common youth, had had their untiring united adoration, as to initiate her return toward complete recuperation.

Looking squarely at the position of mental processes as a modifying force in the progress of pathological activity; and remembering, that they are but rarely considered in the evidence upon which the profession rests for the status of

any given medicine; we are fully justified in asserting, that science, philosophy and prudence alike dictate that the present reputation of drugs should be received by the student with many grains of allowance.

The lesson we are taught by this division of our study, applicable to our present purpose, is to be found in the fact, that this mental force is one of the natural powers brought to bear for the relief of disease; and whatever value attaches to it in this behalf, must go to the credit of nature and time in any correct estimate of therapeutic factors.

Uncertainty in Drugs.—It is not an easy problem to determine the amount of adulterated and sophisticated medicines that are dispensed on physicians' prescriptions. That many of the drugs are impure, and imperfect, and some of them inert, is conceded on all hands. The sources of the information on which this conclusion rests are abundant and constantly accumulating with the observant. It will answer all our ends, however, to refer only to the reports made to the American Medical Association.

In 1848 the report says about $1,500,000 worth of drugs were imported, and more than one half of many of the most important chemical and medical preparations were worthless, and often dangerous; and these facts were reiterated in 1849. About this time the United States Drug Inspection Law went into operation, and its first effect appears to have been to impede and lessen the importation of foreign sophisticated drugs, while it gave an impetus to domestic rascality of the same stamp, so that quiniæ sulphas and morphiæ sulphas, bearing the genuine labels of the most reliable manufacturing pharmaceutists, were found adulterated to the extent of twenty-five to thirty per cent. This abasement was in no wise the act of the party whose label the medicine bore, but was done by the dealers to whom the manufacturers sold in good faith. In 1850 the report assures us that while the

foreign adulteration is now small, the domestic is still increasing. After this date there appears to have been a looseness or dishonesty in the work of the inspection of imported drugs, or otherwise, an incompetency in the inspector; for in 1864 we have the report of Dr. Squibb, that the drug inspection law has been a failure, and that worthless drugs are as common now in the markets as they were before the enactment had an existence.

Nostrums.—And there is still another and a broader field wherein to cultivate our doubts of, and lessen our faith in, the sanitary efficacy of our prescriptions, viz., the thousand and one proprietary medicines and quack nostrums which constitute the major part of the sales of medicines by retail druggists throughout the country, and after the use of which, we have ample testimony that the takers not only get well, but honestly believe their cure to be due to the use of the nostrums.

Thus again we are admonished not to fall into the delusion, that, with our drugs of uncertain reputation and undetermined strength, we cure the distempers of man, but let us reverently acknowledge the saving power of nature and time.

Increased Life-time.—During the last fifty years a conceded increase in the length of human life has taken place in many of the larger cities and more densely populated districts of the civilized world. In no quarter is there an assumption that this percentage added to the general term of human existence is due to the more artificial management of disease; on the contrary, it is acknowledged by all competent parties that the causes of premature death arise from the neglect of the natural laws of health, and the increased longevity has its sole foundation in the better hygiene of the people, and the more thorough enforcement of sanitary regulations around them; thus demonstrating, that it is the prevention of disease, and not its cure, to which we are indebted for the lengthening of the span of life.

Hospital Testimony.—On the supposition that the more regularly the medicines prescribed were given, and the more carefully the attending physician's instructions were carried out, the more certain and the more speedy would be the relief of the sick, we should expect that in the hospitals, where the medical officer is supreme, where the medicines can be kept pure, and the dietetic and general management made as artificial as may be esteemed best, there would be the maximum of recoveries, and the minimum of time wasted in sickness. There are no statistics accessible to the writer to elucidate this point except from Paris, and these show conclusively that the sickness-time and death-rate of the poor who are treated in their hovels, amongst filth, without adequate nourishment, and under many unfavorable hygienic surroundings, is less than amongst the inmates of the great Paris hospitals. The same state of affairs is most likely true of every large hospital fully occupied, wherever situated, and is probably properly ascribed to the depressing influence upon vitality of large numbers of sick kept in close proximity for a great length of time. However this may be, and whatever the true explanation, it is entirely safe for us to draw the conclusion that the most accomplished and autocratic art cannot afford to ignore nature and time in the cure of diseases.

Historical Review.—The paramount importance of nature in the restoration from disease has been recognized by nearly all the leading minds in medicine since the earliest historical times; and there cannot be much doubt that it will continue more and more to claim the consideration of enlightened men, as candid observation and just induction add to our stock of positive knowledge.

Before the time of Hippocrates medicine was too mythical for us to learn anything of its positive tenets. But the Father of Medicine himself, in direct terms, instructs us to

wait upon nature for the cure of disease, while his doctrine of crisis was based upon the power of nature to work off her pathological ills, and his system of diet was an important part of his remedial agencies.

The precepts of Hippocrates governed the medical world for ages after his demise, with here and there a member of the fraternity who denied his authority and discarded his teachings. Arcagathus, a learned and accomplished gentleman, was banished from Rome because of the activity of his remedial agents, and his want of success in battling with disease; while Asclepiades, a rude ignoramus, who gave little or no medicine, but watched and flattered his patients, trusting to nature to cure their maladies, had great success and attained to highest professional honors.

Celsus followed the lead of Asclepiades, and adopted "the Hippocratean method of observing and watching over the operations of nature, and rather regulating than opposing them;" and, says the historian (Bostock): "We here see the germ of the doctrine of the *vis medicatrix naturæ*, which has had so much influence over enlightened physicians of modern times, and which, although erroneous, has perhaps led to less hazardous practice than the hypotheses which have been substituted in its room."

Galen espoused the views and followed the practice of Hippocrates; and the Arabian physicians followed the Greeks and Latins, and especially Galen. Willis's doctrine of fermentation belonged to the same category; and Sydenham "in one important particular very nearly agreed with Hippocrates, that diseased action consists essentially in an effort of nature to remove some morbid or noxious cause, and the great object of the practitioner is to assist in bringing about the proper crisis."

Barelli's motto was, "Attempt nothing without an urgent necessity," while the *archeus* of Van Helmont, and the

anima of Stähl, were fanciful names given to the vital force which in their shadowy knowledge they conceived to be a distinct spirit in the human organization, that controlled all biological activity, normal and morbid.

These names of leading men embrace representatives of every school, sect and division of medicine, from the time of "The Old Man of Cos," to that of the great Scotch genius who wrote the "First Lines of the Practice of Physic."

And now comes Cullen with his *vis medicatrix naturæ*, which has been the polar star guiding all true and rational therapeutics from the time of its proclamation to this day. The principle so named by Cullen "is not supposed to be anything superadded to the body, but one of the powers or properties necessary to its constitution as a living system, and the existence of which is recognized by its effects." "The school of Cos, the Hippocratists, the Animists, the Vitalists, had already proclaimed this truth; but they had all supposed the existence of a principle distinct from the organs," and this constitutes the difference between the present doctrine of the *vis medicatrix naturæ* and the idea of an interior governing and preservative power, presented under multiplied names and phases, that runs through all medical history antedating the advent of Cullen.

The antagonistic idea, that nature in disease is to be opposed, her course arrested and her purpose thwarted, though frequently presented and sometimes taken quick root and had rapid growth, has never been enduring, but, on the contrary, has soon faded, perished and been forgotten, except as a historical fact. Even the Brunonian theory, which was conceived in opposition to, and was cotemporary with, the doctrine of Cullen, and which was so attractive and alluring as to captivate many minds, and even control national schools, is gone, having maintained itself but for a day, as it were, and is now known only as an integer in that vast

monument made up of scientific errors and professional follies.

A principle that was recognized by, and controlled the practice of, the acutest and wisest among medical men from the beginning through all the revolving centuries to the present; that has withstood the assaults of all manner of opponents; that has outlived every hypothesis and theory but those now in vogue; and that has gleamed like an untarnished jewel through all the ignorance, superstition and debauchery of the professional world; surely such a principle can have nothing less than truth for its foundation, is as certain of immortality as any conception of the human mind, and in its very nature must grow and expand as perfect knowledge more abounds, until it moulds, governs, and directs all prophylactic and therapeutic labor, even as the currents of the air mould, govern, and direct the clouds of the firmament.

Conclusion.

Let no one for a moment imagine that the views herein promulgated have a tendency to undervalue the importance of medicine in the management of disease, or detract one iota from the responsibility, the dignity, or the usefulness of the accomplished physician.

Medicines have a positive power that can be, and should be, made available to assist nature in the removal of pathological stimulants, and in the arrest of pathological activity. No one doubts the power of anæsthetics to abolish sensibility; of opiates to allay pain; of aloes to evacuate the bowels; of veratrum to lessen the heart's action; or of quinia to arrest malarial periodic disease. All these, and many more, are in constant demand for proper and prudent therapeutic purposes; and that all of them, not nutrients, and forcible enough to make an impression, are pathological

stimulants and of themselves an evil, militates nothing against their legitimate use, or their positive value. It only signalizes that a wise judgment, a sound discretion, and a just discrimination should dictate and control their prescription, to the end that one evil should be brought into requisition voluntarily, only when it will, with certainty, assist to abate a greater evil. It is the training, the skill, the acumen, that is necessary to the exercise of a sound discretion and a wise judgment in the selection and administration of medicines, that distinguishes the good physician from the presumptuous pretender. One cannot attain to this accomplishment without a clear and intelligent insight into biology, both normal and abnormal.

While the faith is that medicine is paramount, and the rule under it is to give active remedies continually, and the perturbations which accompany their operation are deemed an essential and desirable service preliminary to improvement, almost any numbskull can claim to be a physician and have the claim allowed by the populace; because they cannot discriminate between the means and the result in his practice, and in that of the educated man of science. But when an appreciative conception of what nature is doing and can accomplish, must precede the determination of what aid can and should be rendered her, and how and when, the pretender must stand back abashed, while the man properly trained and with real knowledge will step forth in all the glory of a high priest of nature, offering acceptable service at her shrine; and all who witness his labor shall know that it is good, and say, well done.

Summary.

The prominent points presented in the foregoing dissertation may be enumerated as follows:—

1. All vitalized matter is the subject of a law of development peculiar to its class.
2. Vital organizations are not active *per se*, but are endowed with a capability of activity under stimulation.
3. Normal stimulants produce physiological activity or health; abnormal stimulants produce pathological activity or disease.
4. Human maladies are always the result of abnormal stimulants acting on the histological elements of the body.
5. Disease in any part continues as long as the pathological stimulant is operative; when this ceases, the part returns to its physiological state.
6. To cure disease it is only necessary to remove the stimulant exciting it.
7. This stimulant is rarely known, and still more rarely can it be removed.
8. In most diseases we only recognize the grosser symptoms, after the initial processes have completed their course.
9. After the stage of recognition most diseases must pursue their course through a series of phenomena under an inexorable biological law.
10. The duty of the physician is to watch nature and assist her as opportunity may offer.
11. All perturbating medicines are themselves pathological stimulants, and should not be administered except under a certainty of abating a greater evil.

12. The present popular professional estimate of the medical virtues of drugs rests, mainly, on the vicious logic of *post hoc ergo propter hoc.*
13. That this estimate is erroneous, is proven by:
    a. Curable diseases are recovered from in the absence of all kinds of drugs.
    b. Curable diseases are recovered from under the most diverse treatment.
    c. The adulteration of drugs makes their strength uncertain.
    d. The state of the patient's mind makes the operation of even pure drugs uncertain.
14. A recognition of the doctrine of the *vis medicatrix naturæ* must underlie all rational therapeutics.
15. The principle involved in this phrase has been recognized and deferred to, since the earliest historical era of medicine, and is likely to be immortal.
16. It derogates nothing from the physician, or the agents he uses, that nature is predominant, and art opiferous.