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*Nathan Guilford Esq  
Cincinnati  
Ohio*

**PATHOLOGICAL REFLECTIONS**

ON THE

**SUPERTONIC STATE**

OF

**DISEASE.**

READ BEFORE THE

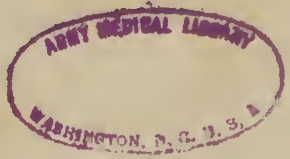
**VERMONT MEDICAL SOCIETY,**

CONVENED AT

**MONTPELIER, OCTOBER 10, 1822.**

BY **JOSEPH A. GALLUP, M. D.**

PRESIDENT OF THE SOCIETY; AND OF THE VERMONT ACADEMY  
OF MEDICINE, &C.



**MONTPELIER, Vt.**

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TO JOSEPH A. GALLUP, M. D.

SIR,—*In compliance with the resolution of the VERMONT MEDICAL SOCIETY, we return you their thanks for your dissertation read this day, and request a copy for the press.*

*Your's with respect,*

EDWARD LAMB, }  
SILAS BOWEN, } Committee.

*Montpelier, October 10th, 1822.*

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GENTLEMEN,

*In compliance with your polite request, I submit the dissertation to your discretion.*

JOS. A. GALLUP.

## PATHOLOGICAL

### REFLECTIONS, &c.

GENTLEMEN,

THE kind reception I have met with on former occasions, when called before this Society, has emboldened me to comply with your request in offering some further sentiments connected with the science of Medicine. When I reflect on the condition I am placed in by the politeness of my associates, I feel impressed with a high responsibility, and I mean not "to marshal the immensity of things" by my own unerring standard of opinion. I have seen and observed a sufficiency to convince me of the hazard of making very strong assurances, or rashly assuming dogmas as the guide of practice in our profession.

We have all beheld system after system in medicine neglected, and mouldering into ruins, or effectually undermined by those destroyers of error, observation and experiment. The havock of former systems or theories has been so profound that it operates almost like a prohibition to future attempts. Whoever advances in such enterprises ought to be well prepared for disappointment, and have his mind well

shielded with a consciousness of the sincerity of his motives. We ought not however, to relinquish the pursuit of systematising. There is a vast magazine of facts now extant, which, if carefully selected and embodied, might serve as a foundation of some future system, which, if it were not complete, might not be false.

It seems now to be the opinion of physicians, almost universally, to be guided by principles in medicine, in preference to the empirical practice, which was adopted in the first ages of the science. This supposes rules of practice, founded on the phenomena of disease, discoverable in individual cases at the bedside.

Perhaps it may not be granting too much to say at this time, that, if well bred physicians were agreed on the diagnosis in any particular case, they would probably be very well agreed on the *methodus mendi*, or most suitable applications. If this position be true, it may be inferred, that, when physicians disagree in opinion in any particular case, it is far oftener concerning the pathology of the disease, than the method of treatment. If they thought alike on the former, there would be but little difficulty as to the means to be used. Notwithstanding the bye-stander may suppose it is altogether in the practical applications, as these are the chief objects presented to his view.

It is to no purpose for any one to stigmatise theory;—This is the natural result of investigation;—



when formed of good materials, having correct principles for its main pillars, it may become a superb structure. "To theorise is to think." The greatest ornaments of our profession have been advocates for principles in medicine; and RUSH wished it might be proclaimed to posterity that he was their advocate.

But hypothesis is another thing;—it is suggestion merely without proof. By examining the basis, we find it sometimes made of precious stones; at other times of hay, wood and stubble, which will not withstand the fire of experiment.

Without detaining your expectations any longer with preliminaries, I must intimate, that I propose to use the present opportunity in offering some suggestions concerning the proximate and radical condition of disease; and which may be denominated a *supertonic* state of the fibres of the system; together with some pathological reflections going to confirm the opinion that such a state actually exists in a great proportion of diseases. It is now offered as a suggestion, and will be left to your future observation and reflection to confirm it as a fact, or discard it as a visionary hypothesis. I need only remark, that my own opinion has been long fixed, and but little anxiety awaits the decision of others.

From the time of Hippocrates, to that of Hoffman, physicians seemed fully impressed with the belief that disease, consisted of some vice in the fluids. It was commonly supposed to be in the blood, but some considered it existed in the blood and in the secre-

tions from this fountain. The blood was thought to be too hot or cold, too moist or dry, too salt or insipid, too thick or thin, too alkaline or acid, too bitter, &c. or endowed with some specific acrimony. All the remedies through many centuries, to the time of Boerhaave of modern date, were prescribed with a view to correct or expel peccant humors from the system in disease. The hypothesis was not detected here as erroneous; for Boerhaave himself inculcated a similar doctrine, with a little variation, supposing a lentor or viscidty had a principal share in the cause of disease;—and that fever was necessary to concoct this, and a certain time must be taken up in preparing, and expelling this enemy from the system, in the manner of a crisis. Not a few of the relics of this doctrine exist at the present day amongst certain sects of practitioners.

Hoffman and Cullen, did much in demonstrating that the active powers of the system had an important share in diseases, both as relates to the causes and actual condition of disease; but yet commingled a great portion of the humoral pathology with their explanations of the phenomena of disease.

It appears to have been reserved principally for Brown, Darwin and Rush, more fully to apprehend, and to blazen abroad the important fact or theory, of disease being seated in the solids, or the irritable and moving fibres of the system;—and that, whatever changes took place in the fluids, were rather the effects of disease of secondary consequence. But it

seems to be the mistake of all these writers to support the hypothesis of an existing debility or atony of fibre as a principal circumstance attending almost all diseases. Brown appeared to have the most confirmed opinion of the existence of debility in the pre-disposed and *actual* state of disease; whilst Rush seemed rather to consider debility the cause of pre-disposition, or origin of disease. But, that afterwards he had some notion, as appears by his practice, of an increase of energy; and his treatment actually goes on the plan of a tonic state of the system, in a great portion of diseases, in opposition to a state of atony, even whilst he supposed a general debility to accompany the disease. It appears therefore, that debility and spasm were the principal conditions.

Dr. Rush defined fever to consist of a "convulsion in the sanguiferous system," whilst Darwin supposed it to consist in the "increase or diminution of direct or reverse associated motions." Cullen supported the hypothesis of "a spasm of the extreme vessels" exciting the *vis medicatrix naturæ*. It seems difficult to understand how spasm, strictly so called, can continue any considerable length of time in muscles; it seems incompatible with the constitution of the living fibres and phenomena of disease. The tonic spasm, as it is called, in tetanus, represents rather an increase of energy than spasm. Tetanus is quite different from convulsions, or inordinate agitations of the muscles. Tetanus resembles rather a super-tonic state of the system, yet having an affinity to spasm. It is not accompanied with much respond-

ing action of the heart and arteries, as in other diseases of a febrile character, but affects more emphatically the locomotive powers of the system, or that section which Bichat denominated the *animal system*; whilst in fevers, strictly so called, the *organic viscera* receive the greatest impression of disease; as is manifested by increased arterial action, and organic inflammation. It may not require a great stretch of imagination to suppose that the fibres of the system of exhaling and absorbing vessels may partake of a tonic, or rigid condition, impairing their peculiar functions, and requiring the aid of debilitating remedies for its removal.

It has been the practice of a great many physicians to use remedies to reduce the severity of disease, without ever thinking they were reducing an actual state of preternatural tone in the system. Some have been led to the practice of bleeding, for example, by knowing from experience it relieves pain, and diminishes plethora, when they may not have been able to give a physiological reason any further than this; and have even supposed a debility or laxity of fibres to be present at the same time.

The proposition will now be made, that, *in general disease, of a febrile character, there exists an increase of tone, or a rigid state of the fibres of the whole system, or a supertonic state.*

It has been attempted to be shown on a former occasion, that a great proportion of diseases, called local diseases by the nosologists, were appendages to, or em-

anations from a general pyrexial habit. The present proposition is intended to be equally extensive; and we may include under the simple term *disease*, a very great proportion of the catalogue of maladies incident to mankind.

In confirmation of the opinion advanced, we may notice in the *first* place, so far as regards the causes of disease, that, a state of inanition, and diminished irritability afford the greatest security against the attack of disease. Capt. Riley asserts, that the half starved Arabs are very seldom sick, and experience warrants, that, an abstemious regimen, void of much stimulating power, gives the greatest security against the invasion of epidemic diseases, or even any disease of excitement. And on the other hand, stimulating food and drink, or articles increasing the tone of the system, predispose to febrile complaints of every variety. Disease is often excited by a debauch of such articles as are acknowledged to increase the tone of the system. The passions of the mind have the same effect in co-operation with other concurrent causes. The contagions have been supposed, by many writers, to act by their stimulation; and this is probably correct; for the impression they make on the system is generally followed with a state of re-action, which always shows an increase of stimulation and tone.

Whatever the quality of the causes of disease may be, and in whatever manner they impair the system, they are pretty commonly attended with the adjunct influence of cold. We cannot attend much to a discussion of the influence of cold as applied under

different conditions of the living system ;—but may simply remark, that it is a very common and efficient agent in the production of disease under various circumstances. Cold is said philosophically, to be the absence of heat ;—but as relates to the effect on the vital solids of animals, physiologically, it is as much a positive agent as heat, or electricity. Its immediate effect is to constrict, and condense all bodies.—The internal heat of animal bodies is nearly stationary, under different atmospheric temperatures. Every variation of cold, as well as external heat, from the temperate degree of 63 of Farenheit's, has a positive effect on the living fibres, by varying the natural standard externally. The property of the animal economy is such, that there is manifestly an increase of tone in the system immediately perceptible in the succeeding phenomena, after the application of cold ; and it is probable the concurrent operation of cold has a share in this event. This state of increased tone following cold, was called by Hoffman and Cullen, a state of spasm of extreme vessels. Although spasm may attend disease, yet it seems difficult to imagine how a spasm, strictly so considered, can continue very exactly of the same degree for weeks, months, and years, or during the continuance of the diseased state. It is more in accordance with fact, and all analogy, to consider it a ~~viscidty~~, or *morbidity* increased tone of the fibres of vessels. When cold is continued, and in sufficient severity, the fibres of organs become so far constricted that the functions of such organs entirely cease ; but an intermediate state gives occasions to re-action by which the phe-

*rigidity -*

nomena of excitement and disease are displayed. The effect of cold on the living system, is different from that on inanimate matter. It is in consequence of cold applied to the vital solid, in co-operation with other causes, that the peculiar phenomena appear, which we discover in disease; and the phenomena are more distinguished as cold may happen to be applied to a system under irritation from other circumstances. Hence, if a subject already in a state of predisposition, or irritability of fibres from heat, or the remote causes of disease, should be exposed to cold, he would be more likely to be affected by disease, than one in a healthy state. This is in accordance with the remark of *Dr. Franklin*, when he said it was high living that occasioned folks to take cold. It is agreeable to every days experience, that, people of an increased tone, and irritability of habit, are more readily hurt by exposure to cold, than these in a condition void of preternatural irritation. In such cases the different existing powers act together, and in a peculiar manner on the animal fibres endowed with vitality.

A super-tonic state may best explain that condition which exists in tetanus, and continues till death; and it gives a more consistent view of the condition of muscular fibres rather than referring it entirely to spasm. But if it is real spasm, it is that which partakes greatly of an universal permanent energy.

There is no need of being confounded in the dilemma some have fallen into, concerning the existence of increase of tone, or rigidity of fibres, and a debili-

ly existing at the same time. *The increase of tone is in the fibrous structure, affecting muscles and vessels; the debility is the effect of the impaired functions of the fibres of organs.* If the fibres of a muscle are impaired in their pliability, or mobility, by a rigid durance, that muscle is poorly conditioned to move the limb; its function is debilitated. If the fibres of an internal organ, as the lungs or liver, are imprisoned by a super-tonic condition, the function of that organ is impaired, or fashionably speaking, debilitated; so in these cases there will be an injured function of the lungs, liver, &c. So the function of the brain, may be injured, impairing the vital energy. If this should take place in the skin, there may be imperfect perspiration, and so of other organs; if their functions are injured. But it should be understood that in the progress of disease, these organs may have a morbidly increased secretion. When an organ is moderately increased in its action, its function is accelerated, as often happens in the first stage of disease of less severity;—this same organ, in a more supertonic state in the stage of excitement, or inflammation, has no secretion; but when the excess of tone diminishes progressing into health, there is usually an increase of secretion from the organ, of a morbid kind; this used to be called the *erisis*. This is looked for by some with anxious solicitude as a mysterious working agent of the cure; whereas it is only the effect of a relaxation of emunctories. It may be demonstrated, that, the crisis may be anticipated by judicious treatment; and when the



patient has this privilege, he will not commonly be vexed with dangerous discharges of blood, sweats, diarrhœas, &c.

The whole system sympathises in such an astonishing manner, that the hurtful impressions on the surface are instantaneously communicated to the organic viscera, and they experience their full share of disease. The same explanations may be applied to all organs of the body, and to the whole of the functions; for in general disease no part escapes injury, although some suffer infinitely more than others.

In the *second* place we will consider some of the phenomena apparent in the diseased habit as proofs of a supertonic state. To this purpose observe,

*1st.* The shriveling of the skin, with goose pimples, and rigors, as demonstrative of a beginning rigid condition. Haller remarks, "in living animals, both from cold and fear, the skin is stimulated, so that it grows harder, and erected, and along with this hardness contracts itself."

*2d.* The permanent paleness, and contracted countenance show a constringed state not readily admitting the natural circulation, meaning at the attack of disease. The increased circulation in blood vessels, and heat, which follows, is in consequence of morbid reaction supervening. And again,

*3d.* After the circulation has been forced, either by nature or by art, the high state of action which follows, warrants energy. Throbbing, heat, and pain, indicate the same.

*4th.* Thirst, and want of perspiration, indicate a preternatural rigidity of vessels in membranes.

*5th.* The increased power of the heart affords indubitable evidence of an increased tone of action. It may here be noticed, that in certain instances, especially at the attack of severe febrile disease, the same explanation may be given concerning its action as before of the impaired function of the external muscles. A rigidity of fibres impairs the regular function of the heart; and, in the severer grade of diseases, the power of this organ may be partially or totally suspended at the access of disease, as occurs in plague, yellow fever, and spotted fever. A slighter impression on this organ gives a singular rapid responding action, bearing some resemblance to a spasmodic action. The energy of the system does not seem to become fully and regularly expanded, but inordinately so, whilst debility is apparent in the functions of organs; there being every where a constricted, or supertonic state of fibres.

*6th.* The hardness of the pulse, although small, indicates a supertonic state of the system. The action of the heart, and pulsation at the wrist, are always in unison;—and both these are in harmony with the general tone of the whole system. A sharp and frequent pulse, whether small or full, indicates a rigid state of fibres. There is also, an hinderance to the free transmission of blood through the finest arteries and exhalants; coldness is perceivable at the surface and extremities. This torpor of function is

evidently the effect of a supertonic state of the vessels; for evacuants, and debilitating remedies often remove it.

*7th.* The state of the blood also indicates strength and solidity in the greatest proportion of diseases. It is more adherent than in health, and is often covered with a dense film of coagulable lymph, which always shows an increase of tone; for the density of blood is always in harmony with the force and freedom of the moving powers.

Whilst the arterial functions are greatly impaired, at the attack of disease by excess of tone, the coagulable film does not appear on blood being drawn; but after the supertonic state is partly subsided by some bleeding, and other means, this will show itself along with a greater vascular excitement.

Again in some conditions of disease, or that state which has been called putrid, there is a deficiency of density in the blood, or looseness of adhesion. This occurs in extreme cases, and may admit of the explanation before given, relative to the loss of function from an impervious and rigid state of the fibres of vessels and organs. As the perfection of blood is always in harmony with the vascular powers, it may easily be apprehended that, a diminution of the perfectibility of vascular function will leave the blood, and all the secretions, in an imperfect state;—and from the want of a suitable influence of the vital impressions, they may even be exposed to chymical decomposition.

8th. A supertonic state is discoverable in the internal organs. Expectoration is dry and difficult; the secretions of bile, urine, &c. are scanty from impaired function, although much tone exists. When there is a diminution of tone taking place, imperfect, or morbid secretions follow.

9th. Inflammation, either external or internal, of one character or another, very constantly attend the diseased state. These unequivocally, show a supertonic state, and perhaps inflammation may be defined an increased action of the part. The phenomena attending the various terminations of inflammation may all be explained on the principles of the rigidity of fibres, and injury of functions of the part affected.

Most if not all the symptoms of general disease, may be explained on similar physiological principles, without regard to the duration of time this preternatural state may have *existed*.

We may *thirdly* remark, that, the *remedies* found useful for the removal of disease of only moderate excitement, are such as diminish the tone, or tension of the fibres, and increase the functions of organs; and they may be allowed to prove its existence.

1st. Warm bathing relieves a rigid state of the fibres. The flow of blood to the part that is bathed shows a lessening of rigidity; an increase of healthy action is the effect of vascular freedom; but this is brought about by a removal of the preternatural tension of fibres by the use of caloric, friction, and water. These mollify the rigidity of every thing else

as well as the living solid. But this is not saying all; for tepid bathing equalises the action, and thereby sympathetically relieves the most internal and remote sections of the system, from the severity of pain, and local derangements. It relaxes the tone of the fibres, and thereby the organs are enabled to perform their offices more naturally, and the pain of distension is taken off.

Warm bathing and friction have not sufficient effect in producing permeability and natural warmth in some cases; I mean those where the function of vessels is *greatly* impaired by an increase of the rigidity of fibres from delay, or from bad 'treatment; as where this supertonic state has been promoted by stimulants and tonics, as wine, bark, opium, mercury, &c. with the omission of proper remedies: Such cases must often necessarily prove fatal.

*2nd.* Cathartics diminish the volume, not only of the intestines, but of the circulatory system. This diminution lessens the state of tension; by this means the function of vessels is better performed in disease. Not only this, the nausea which sometimes accompanies their use has a share in diminishing preternatural tone. The influence of cathartics is very extensive over the system, like most other remedies, by a sympathetic effect in promoting the functions of organs.

*3d.* Emetics give stronger evidence of lowering the tone of the system. Vomiting seems to be the remedy established by nature for the cure of many diseases. I speak of many diseases; meaning chiefly the various conditions of disease as the local affec-

tion may happen to eventuate on different organs. This operation seems to be connected with that common and spontaneous effort of the vital energies, which is so conspicuous, and is astonishingly manifested on almost all occasion of injury done the system.

When an universal injury affects the irritable system, the sympathetic influences radiate various ways and assist in the removal of the morbid impressions; and as the stomach is a sensible organ, holding intimate fellowship with all its fellow organs, it is one of the first to sympathise, and perhaps the most active in removing the primary injury by puking. Nausea has a singular, and common effect, in a sympathetic manner, over all the system, and wonderfully prostrates the strength of muscular fibres; and by diminishing tone increases the functions of organs. The agitation of puking assists in producing the same effect. We may adduce these circumstances accompanying vomiting as proofs of a supertonic state existing in disease. Furthermore we use emetics to overcome a state of ostensible rigidity on some occasions; as in the case of a dislocated bone difficult to be reduced, a dose of tartarised antimony, producing nausea, removes this rigid state, and the bone may readily be replaced.

When calculi are lodged in the common bile duct, or in the ureters, the operation of spontaneous puking really facilitates their progress. This is called overcoming the spasm, but it is in fact overcoming a fixed rigidity of fibres. Spontaneous puking

arises in the first months of pregnancy, and is of important use in removing the firm state of the uterine fibres, more readily to accommodate the increasing contents. And again slight emetics facilitate parturition. In the case of internal inflammation, puking is of use, and sometimes is efficacious in overcoming diseases; but, it is often inadequate without other aids, and when those are withheld, the fruitless attempts are often reiterated in an unprofitable manner.

In hysteric<sup>is</sup> and other convulsive diseases, emetics are of utility, and their pathology warrants a supertonic state. The same may be said of mania and apoplexy, &c.

The use of emetics is founded on the laws of the animal economy, and that without doubt, chiefly by diminishing that supertonic state of the system we expect to show as existing. They give liberty for the circulation to obtain on the surface of the body by a sympathetic action, for their influence is on every fibre of the system, of an oppressive and debilitating kind.

Much more might be advanced concerning nausea, showing the fact, that a morbidly increased tone constitutes the foundation of disease.

4th. If any further proof of such a state should be required we need only to name blood-letting. Perhaps there is not a physician in the world, but who is ready to say, that, bleeding has directly a debilitating effect on the system; but how often do we see it followed with more salutary strength?—where a deceptive debility appears, this remedy is often omitted to

the prejudice of the sick. That the natural strength of the system, is, on some occasions, immediately increased, is an incontrovertible fact. When this is not so readily perceived with respect to muscular motion, it can be perceived in the increased force of the heart and arteries, &c. It is very common for coldness to remain on the surface, and extremities, until some blood is taken; and, the circulation then expands, followed with secretion and warmth. This occurs in both acute and chronic diseases. By removing the supertonic state of the system in disease, the fibres perform their functions more perfectly; the muscles are more energetic; the heart, and arteries act more freely and steadily; and local pain is also removed by relieving the tension and rigidity of the part.

If this remedy should seasonably be carried to a sufficient extent, a mitigation of disease, with increased secretion, will very certainly follow. But it is true in some bad cases of some continuance, the rigid condition every where prevailing in the system, it cannot be overcome by ordinary bleedings. In this case they ought seasonably to be carried to the point of relief. By this is meant, to that extent in the removal of morbidly increased tone, as to prostrate all the powers of vital action for the moment; that is, to produce deliquium animi. Many diseases cannot be cured by ordinary means; but it may be said, to the honor of our profession, and the consolation of the distressed, that, there is a great probability of overcoming the most violent attacks of disease by this operation, when used before secondary changes become very



important, and if high stimuli have been withheld. Immediately on reanimation, sweat flows from every pore, which is a sure token of the giving away of that degree of tone, which supports the disease. Not only the secretion of sweat follows, but the other secretions, and health is restored.

It is immaterial to particularise the varieties of diseased conditions in which this remedy becomes admissible. On another occasion, when I had the honor of addressing this society, it was maintained that disease was universal, and that, the local tendencies were mere concentrations of morbid action, constituting what we call particular diseases; so in the present case, the use of bleeding may be practised very extensively without much regard to the local tendencies, but with the view of subduing the morbid diathesis.

May we not hence conclude, as bleeding has satisfactorily a debilitating effect on the living system, that, its great utility in practice proves a preternatural state of tone to exist in disease? It is preposterous to say debility both causes and continues disease, and that we bleed to remove this debility!! The physiology of the human system cannot admit of such contradiction, any more than it can be admitted by common sense.

Other arguments might be named in proof of our subject; it however, may be only mentioned that stimulants, and such medicines as increase the tone and powers of the system, most commonly do harm,

and augment the weight and danger of disease ; with certain exceptions however, as where they may be directed to procure some secretion and evacuation, as sweating ; or to relieve present lowness ; or produce a more stable and equal action, as in some cases of epilepsy, intermitting fever, &c. There may be a moderate diseased condition in similar cases attended with irregularity and mobility in which tonic remedies may prove salutary. As we are not however considering the entire character of disease, nor the mode of treatment, it will not be expected that any reference will be had to certain mild stimulating medicines and food, which often become useful during the progress of disease.

Another fact however in proof of the supertonic state of disease may be noticed. In delirium, and most other forms of insanity, there is an actual increase of muscular power above what the subject is accustomed to possess in health. If a patient is for some time delirious and strong, and then directly comatose and weak, shall we say his disease consists in debility ? Or have we not cause to believe that this comatose state, instead of debility, is the consequence of the enthralled condition of the functions of organs from an increase of contractility, and congestions impairing the vital energy ?

It is probable our observations may appear more conclusive as applied to diseases of acknowledged high action, than to such as are not remarkable for severity, and especially those which have been styled chronic.

The relative force and duration of any particular habit of disease depends on a diversity of circumstances, the consideration of which we cannot enter on at this time; such as age, climate, regimen, severity of morbid impressions, temperament, susceptibility, &c. To these may be added the different conditions of predisposition, and numerous circumstances connected with the attack of disease, rendering the causes more or less efficient in the production of the phenomena which follow. Numerous incidents concur, when febrile diseases prevail, in rendering some cases milder than others. The same is observed in lingering disease. But as the general phenomena and means of relief are quite similar in kind, it seems as if there must be a common act of living vessels concerned in the work of disease, and that we are not warranted in supposing that opposite effects flow from the same cause.

It is not now to be understood, that there is no difference in disease, but that which consists in simple excitement;—the nosology of human maladies presents various examples of diatheses differing considerably in their particular character, and admitting of a treatment suited to the peculiarities of each. This will be noticed most in contagious and inflammatory diseases; and in lymphatic diseases, as scrophula, cancer, and syphilis; as also scurvy, &c. However, all these are attended likewise with a state of excitement, and have indubitable evidence, more or less, of a supertonic state of the fibres. There may not be so great a difference in the intrinsic character of dis-

eases of different durations, as has been supposed by some; but that the apparent difference consists in the severity of different impressions, on subjects of varied susceptibilities. In one, the phenomena, arising from an attack of any particular disease may shew strong symptoms of responding action; in another, of the same family, perhaps, the symptoms may be more slow and dilatory, and even to that degree, as to obtain the appellation of chronic, when they are of similar character, and originate from like causes. Indeed, every argument showing an increase of tone in the fibres in acute diseases, will apply to those of a lingering kind.

It may furthermore be noticed, that at the attack of severe epidemic diseases, a state of extreme depression often occurs threatening sudden dissolution. Perhaps in these cases, the supertonic state of the fibres, and depravity of function, are so great, that responding action cannot emerge from its embarrassment, without remedial aids. If ever this state of torpor of function can be early removed, only so that freedom of action ensues and latent energies brought forth, we are liable to have a case of high grade of disease, sometimes amounting to ardent fever. This must be done however, before the vital energies greatly diminish, or collapse, or total cessation of function becomes much threatening.

But on the contrary, let such a case continue, with the vital powers of the system greatly embarrassed or imprisoned, their functions must cease sooner or later; perhaps suddenly at the attack; but it may go

through a stage of imperfect excitement, and when the supertonic state of the fibres is not relieved by nature, nor by art, a state of collapse ensues.

Shall I be accused of hetrodoxy in saying, that the same supertonic state of the fibres continues here, with so much apparent debility as is manifested in the article of death? If so, then let me have, at least the privilege of stating, before my anathema is pronounced, that in tetanus, the tonic condition is proved to continue until the last struggle for the expulsion of the vital principle is over, when the muscles become as pliable as in death, from any other cause. I would with due deference suggest, that something of a similar state of fibres exists in the one case, as in the other; only in tetanus it seems more evident in the fibres of the voluntary muscles; and in the other case, it is principally in the involuntary action of vessels, and the irritable fibres of organic viscera. Considerable analogy prevails between the supertonic state of disease in vessels and organs, and that state of disease in muscles called tetanus. Indeed the fact may easily be proved, that fevers sometimes end in tetanus; and tetanus may end in some other disease; that is, the local impression, distributed over all the voluntary muscles, may be followed by pulmonic inflammation, or some other disease, when the tetanic symptoms subside. It is not however, to be understood that there is no difference; but that one state may illustrate the other.

Having progressed thus far, and the suggestions requiring more extensive and diffuse explication, it

will only be shortly noticed, that a similar ratiocination may be extended to diseases of a lingering or chronic kind. I shall not at this time undertake to solve the question, how a supertonic state can exist for a great length of time. We will revert to the fact in this instance, of fevers terminating in chronic disease; and this is sufficient for our present purpose. Nor can I allude to the effects on the system *reflex* of the ~~reflex~~ action of local determinations. Indeed, the preceding observations have been made on general disease, and common principles, without regard to many incidental circumstances, which vary some of the phenomena, but not the intrinsic character of disease. There seems to be some common affinity, some general principles existing in disease, intricate in their nature, and obscured within the veil overspreading the hidden mysteries of the vital economy. But I hope an attempt to raise this covering, and aiming a glance at these curiosities, will not be attended with the same fatal consequences, as the opening of Pandora's box is said to have been.











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