

AN

# INAUGURAL DISSERTATION,

ON

*On the Pathology of Fever in general*



SUBMITTED TO THE

PRESIDENT, BOARD OF TRUSTEES, AND MEDICAL FACULTY



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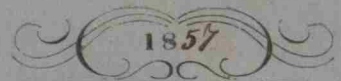
## DOCTOR OF MEDICINE.

BY

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OF

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# The Pathology of Fever

The history of fever is nothing more than a review of the doctrine that has risen, and sunk again and again, concerning the nature and treatment of fever; whatever object of interest or importance within the sphere of medical science may have attracted the attention of physicians, fever has at times and upon occasions been presented with the most extended and inviting plain for exercise and ingenuity.

It is in this department and in no other than this, that these observations have been made; in accumulating material. When it is considered that the destroying angels have made their most desolating visits under the form of febrile epidemics and, that in that outstretched list of maledies that affect the

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human family, fever occurs in perhaps six cases out of seven; perhaps the paramount importance of this subject is strongly forced upon our convictions. From a retrospective glance over the history of our science, we are forced to acknowledge perhaps that there is no subject that is more calculated to humble the pride of human redress than this burning and terrifying one. The human mind has been engaged in it ever since the days of Hippocrates, it has risen and sunk again and again in a continued and rapid series of succession, each has had its time to stand upon the rostrum, its votaries to sustain it, but the time has past, all these insubstantial, though as thorough



wrought assertions as thought by those of old have passed from the scene of action into silence, Has not the mind made no advancement in regard to the pathology of fever? are we no nearer correct than those medical men were in the days of the fathers of medicine? has intelligence wandered in idleness and brought back no improvement from the regions of speculative improvement in this great point? There has not a doctrine or theory been proposed on this subject, that did not banish some old rubbish, or bring to a more clear view some elucidation, or bring to view some other important item that had not been fathomed? The thoughts of speculation have perished, but the truths and indisputable principles which were

mingled with them remain as so much valuable treasure extracted out of the rock of ancient systems, Superstition is no longer tolerated in science, Philosophy will not acknowledge her as a legitimate servant, the circle of her nation has gone by, and not unlike many other things which are at once obvious to the intellect, and the existence of which almost every one can decide, fever does not admit of a strict and unobjectionable definition, since there is not a single symptom which is invariably present and which can be regarded as absolutely essential, Boerhaave collected together from a great many authors all the symptoms which had been observed in fever, he then strikes from the list

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all the symptoms which do not appear in all, but only in certain modifications of fever retaining such only as by the common consent of authors and his own observations were found to be present in every instance of fever. The result was that only three symptoms were left standing, viz. a quick and frequent pulse, preternatural heat of the external surface of the body, and a sense of coldness or chilliness in the commencement. Notwithstanding the great difficulty or rather the impossibility of giving a true and classical definition of fever, yet the train of phenomena which this state of the disease presents under all its modifications, varying more or less in their connection and succession,



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offers a character sufficiently distinct and definite for easy, certain, and true recognition, Pathologists have divided fever according to their termination into idiopathic and symptomatic. By the former of these classes, are understood those fevers that are completed and sustained by causes that produces a general and morbid state of the system, independent of local inflammation or fixed irritation. Those who admit the existence of such fevers, suppose that the febrile cause produces a deadly impresson on the sensible extremities on which it acts according to the catenation of organic sympathies, and finally results in a state of disease characterised by the ordinary phenomena of fever, or they presume the remote cause may gradually change

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the healthy character of the circulating blood, which acting as a morbidick irritant on the heart and arteries, that giving rise to reaction, according to the ill cause of fever, it is limited to the productions of the primary and local inflammation or irritation, the phenomena being the result of this primary affection, or in other words, the secondary and symptomatic excitement of the pre-established cause of irritation. At the head of those who advocate the excessive symptomatic nature of fever, is the celebrated Broussias, though whatever may be thought of his peculiarities and strange doctrine in relation to this subject, he has manifested a professional zeal that has placed him high among the great lights of the medical world,



Not satisfied with the adoption and defence of the universal doctrine of the general symptomatic fever,

Broussias thought that the inflammation or irritation whence the febrile sympathies radiate as from a focus is almost universally located in the mucous membrane of the alimentary canal, and hence gastro enteritis is the great bugbear of the febrile phenomena, that fever is a very common result of local inflammation is unquestionable. So intimate are the sympathetic relations between all the various parts of the animal body, that no part or organ can be very strongly irritated without causing sympathetic irritation in other organs or parts, If this principle involves the sanguiferous capillaries, the irritation

will be translated by sympathy to the great general and vascular system, and fever be the consequences, but if the local irritation, though it may be purely nervous, it will be spread through the whole nervous system, and as it were coiled up in it and gives rise to spasms or some other form of general nervous affection, without the fear of doubt the mucous membrane of the alimentary canal is much more inflamed than was, or is generally supposed. It is thought that in many cases of fever such an inflammation constitutes principally an essential cause of the febrile maladies. Perhaps this is most apt to be the case in those that result in the combined powers of impure and indigestible diet and the stagnated atmospheric vicissitudes;

Yet we may admit the correctness of these observations, but yet, to run all fevers, remittant, intermitant and continued, to gastroenteritis, is as absurd and remote from truth, as it is pernicious in its influence on practice. The advocates of the physiological doctrine as it is called, endeavour to support and maintain their sentiments with regard to this subject by the phenomena detected in postmortem examinations, and by argument founded on physiological principles. It is affirmed that marks of inflammation occur in the mucous membrane of the alimentary tube in subjects that die of febrile affections. The capillary vessels of this membrane are injected, and tracks of previous inflammation are observed, Admitting that



inflammations are as universal as they are said to be, is there not more reason to believe that very frequently, inflammation and suppuration supervenes during the run of the disease as a consequence of this fever rather than the preestablished inflammation? though we frequently see inflammation rage in parts exposed to observation at different periods after fever is fully and firmly established? Indeed when it is considered that in all febrile affections the secretions of the liver are poured in to the alimentary canal are unnatural and vitiated, when the process of digestion is suspended, or much impaired, and frequently the formation and decomposition of the contents of the stomach and bowels are especially favoured, is there any cause

to wonder that we should so often meet with tracks of inflammation in the digestive organs in those who die of febrile affections? The Broussians manner of treating fevers although meant to obviate such inflammations, The almost total proscription of purgatives, from the list of our remediate means of treating fever, so far from lessening the tendency to gastroenteretes, tends I think so far as I can conceive to an opposite result generally. In a great many cases treated by Bouillaud, not a single case of which was there was purgative medicines administered by the mouth, In nearly all of these cases inflammation and ulceration were detected in some portion of the mucous membrane of the bowels, To one not thoroughly en-

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-dowed with Broussianism, it does not appear that any one should withhold a laxative under the view of its causing irritation and yet suffer without any such fear the most irritating to lie undisturbed in the bowels, It is true that laxatives were repeatedly resorted to in those cases but that they did not move the morbid material that was lodged in the alimentary tube, is absolutely manifest from what Bouillaud himself stated, After having told us that in all the cases that he examined there was the marks of inflammation in the intestines, he also states that in general, the stomach and small intestines which were filled with yellowish green bile, and that the remainder of the substance which was



found in both small and large bowels, it invariably has a foetid odor, and frequently exhibiting the appearance of mustard. Can it be supposed reasonably, that the passage of a purgative in these cases would have been more injurious than the morbid and acid contents of the bowels which were so long left in immediate contact with the mucous membrane of the alimentary canal? It is thus it can not be doubted that many instances of gastroenteritis in the practice and dissections of the Broussian school are developed, had laxatives been employed with moderation it is probable that this fatal and so much dreaded inflammation, would in some instances at least, perhaps in many,

<sup>have</sup> been prevented and the world deprived of a large portion of these victorious demonstrations which are continually brought out in formidable array in support of the physiological doctrine. Though as a further offset to the evidence adduced from post mortem examinations, it should be remarked that so far as the mere redness or injected state of the mucus membrane is concerned, we can draw no distinct and correct inference as to the previous existence of inflammation in this structure, that these maladies are often the result of changes in articulo mortis, I do not think indeed that it could consistently be presumed that the injected state of the mucus membrane of the intestinal tube, so often diseased in these subjects

who die from fevers are always to be ascribed to a mere post mortem appearance, though such changes do sometimes, yes, often occur, and they have been supposed to be evidence of previous inflammation, there is certainly but little doubt existing, though the first obvious and remote febrile cause and effect consists in almost universal diminution of the nervous energies, and of the action of the heart and arteries, It is manifested by the weak and contracted pulse, general faintness and lassitude, the diminished and absent temperature, and the sense of chilliness which is, in all febrile affections, These signs of fever are very conspicuous in intermitant, remittant and catarrhal fever, although there is nothing that can justify the



inference that they are dependant on inflammation in the character. With reference to Dr Bernstrom, he says inflammation cannot exist in the cold stage of fever, all the new appearances are utterly and directly opposed to it. That course and phenomena of intermitant fever positively presents us with insurmountable objections to the physiological doctrine, though the period of this fever is utterly opposed to the idea of their dependence on gastro enteritis. Indeed it is true that affections, <sup>that</sup> are of an inflammatory character, have often been known to return in a strictly periodical manner, but these cases should be viewed as deviating, and able to gather contrary to the entire and universal course and character of plegmasial diseases.

Of course an inflammation that recognises a perfect periodicity in its attacks must be sui generis. If intermitant fever is dependent on inflammation of the mucous membrane of the alimentary canal, then of course this inflammation is periodical, and therefore very distinct from the inflammation that produces remittant fever, certainly in this maledy it is continuous. Then these two forms of fever are produced by the same distinct cause, and of course we are therefore bound and forced to admit by the supposition of this doctrine, that the same remote cause is able to produce two kinds of inflammation essentially and very distinct from each other. The therapeutic character of the remedies to which have been found the most advantage in or

-resting intermitant fever is utterly opposed to the idea that gastro-enteritis constitutes the great proximate cause, who can believe that arsenic, black pepper Sygar and other remedies of a more simple character are peculiarly adapted to the cure of inflammation of the mucous membrane of the alimentary canal and its glands. And yet these articles appear to be dreaded by the disciples of this doctrine on account of their tendencies to produce gastro-enteric irritation, and yet all experience proves that they are the most powerful among the therapeutic agents for the cure of intermitant fever.

Broussias says that every irritant that is capable of producing perception in the brain, passes back by the nerves to be repeated in the mucous membrane



of the alimentary canal, quoting his own words, thus if a person be inoculated with small pox virus, thus the irritation of the primary pustule or if the inoculated fever is conveyed to the brain, thence it is reflected by the nerves upon the mucus of the alimentary tube where it establishes an inflammation, This intestinal inflammation constitutes the essential cause of eruptive fever and the eruption its self is nothing more than a metastatic disorder of the cutaneous system. Then the mucus membrane of the intestinal canal possesses a very wide plain of sympathetic relations, It is a fact that it is as undeniable as it is important in a pathological point of view; being that this fabr

- it constitutes a subordinate sensorium, common to which all morbid substances are especially conveyed, after having been perceived by the brain, is a position which all the zeal and ingenuity of its advocates have up to this time failed; and I think will ever fail to place upon that firm foundation that which it ought to have to serve as a foundation of our pathological faith, I do not object to the general fact that all the impressions that have the power of exciting fever, are in the first place transmitted to the sensorium commune, and then transmitted through the entire system and very often upon some particular organ or structure; though this reflecting impression does not, it may be

justly maintained; establish a focus of irritation, not always or even generally fall especially upon the intestinal mucous membrane, when the morbid impressions are always transmitted to the mucous membrane of the intestinal canal, the impression of all agents, remedial as well as others, must of course be referred to the same structure, (observations) Though this does not concur with the peculiar results, and thus when mercury is rubbed on the skin, the salivary glands, the gums and the mucous membrane of the mouth is most affected from this agent, I hope that it will not be contended that a gastro-enteritis must be established before ptyalism can be produced; If the narcotic medicines be applied to the exter-



nal parts of the body, the impression of these medicines is directed to the nervous centre, I will illustrate it by one or two facts. Now when cantharides is put in contact with the surface, the irritation is transmitted to the neck of the bladder and the same distressing action takes place when turpentine is taken internally or applied externally, and not to the mucous membrane of the ~~bladder~~<sup>bladder</sup>, and yet fever may be the result. From these and many other similar facts that might be suggested, it is manifest that the law that supports the animal economy which is alleged a great many febrile impressions which are repeated in the mucous membrane of the bowels, it is too much supposition, and to say the least

of it, very improbable, I will quote a few words from Clobberbuck, one of the greatest lights that has ever poured forth its glittering rays upon the medical world, The fallacy of those doctrines which confine the primary inflammation to some one structure exclusively, is strictly illustrated by the circumstances that different writers have fixed on different tissues as the parts affected, primarily affected in fever, Thus Clobberbuck maintains that fever is altogether a purely sympathetic affection, depending on local inflammation, pre-established by the febrile cause, He asserts that inflammation, primary as it is invariably in the brain and its membranes, and its membranes produce the phenomena

discovered in post mortem examinations, in testimony of the correctness of this doctrine, many on the other hand assert that the primary inflammation is seated in the mucus membrane of the alimentary canal, Upon a subject so important as fever which has gained the attention of medical writers in all ages, I deem it proper, even in a paper like the present one, to give the most important opinions that have been entertained in accordance with it, especially in opinions which are involved in the general medical doctrine, The humoral pathology is the first that approaches in relation to fever, Hippocrates thought increased heat to be the essence of fever and the proximate cause is an abundance of bile, the black, bile the phlegm or the blood, Many others had



the opinion in relation to heat carefully distinguished plegmasia or inflammation from fevers properly so called, referring to the latter an alteration or putridity of the fluids, the varieties being produced severally by the bile, the black bile the plegm and blood, Thus the idea that has been sustained by ancients, that the agitation in the system is the object of expelling the superabundant or morbid humors, or to compose them so as to be harmless, Certainly there were of course differences in opinions among ancients as well as modern writers and Celsus seems to have been very near the truth in treating of fever, simply, as a disease of the whole body, Then the Greek authors have been followed by the Arabians, and upon the revival of learning

they were naturally the fountain head from which the European physicians derived their opinions; The discovery of the circulation of the blood produced some modification in these opinions, it was then and is now understood that bile and plegm ~~were~~ <sup>are</sup> certain secretions of the fluids, and this fluid became the source of the mischief, Not only in cases of fever, but in all other <sup>diseases,</sup> it was supposed that noxious substances from without were in consequence of a change that continued to march with the body, that the system was excited by the appearance of the impurities to direct efforts for expulsion, This is the sum and substance of the humoral pathology; According to this view, fever is only a violent effort of the system to rid itself of noxious

matters, and the perspiration, bilious discharges, turbid urine, suppuration, <sup>and</sup> cutaneous eruptions, which very often attend fever, are different means by which this matter is merely expelled, As to the origin and nature of the morbid matter and its mode of production, there was much difference of opinion, The idea of the necessity of a certain concoction by which the morbid matter was to be prepared for expulsion, was the most injurious of the theoretical notions, thence the hot drinks and close confinement, ~~was~~ so fatal in smallpox and other febrile diseases, that it led to the practice under the idea that the febrile movement was necessary to the concocting process of employing means, rather to increase than to moderate them, Among the modifications



of opinion connected with humoral pathology and origin of fever, are the words of those eminent physicians Boerhaave & Stahl. The former, while admitting the influence of chemical changes in the fluids, ascribed not so much to contamination of the blood, as to its great thickness or viscosity which caused it to stagnate in the extreme vessels, and thus brought the cold stage of fevers followed by all of its train of excessive action, conceiving that fever consisted in a plethoric or depraved condition of the fluids, he imagined the existence of a superintending, rational principle, which in this, as well as in all other diseases, watched over and directed the movements of the system, with a view to its preservation, so that fever, instead of being a morbid condition

was in fact a series actions under the guidance of this principle for the removal of the real cause of offence, This theory led to an expectant practice which contented itself with her objects, The theories both of Stahl & Boerhaave had a wide prevalence in the schools of Europe, and made an impression on the sentiments of the profession which has scarcely yet disappeared. Hitherto all writers had thought that the existence of fever as a general disease, independent of any local alliance, while it was <sup>also</sup> admitted to arise frequently from inflammation of particular parts of the body. In the former cases it was called idiopathic or essential, and in the latter, sympathetic. Pinel concluded that each variety of fever to be connected particularly with some local disorder, as bilious fever with impaired digestive organs, nervous fever a disease of the brain. &c but he did not deny

the true nature of the burning and teeming  
ing maledy itsself. Clutterbuck, who pub-  
lished in 1807 his inquiry into the seat and  
nature of fever, was the first we think  
who denied distinctly the existence of idiopa-  
thic or essential fever, and asserted that  
the uniform dependance was upon local  
inflammation, Those which had hitherto been  
thought to be idiopathic, he supposed to be  
inflammation of the brain, and accordingly  
proposed the name of encephalitis, he  
supported his doctrine by the arguments that  
the brain is nearly always affected in these  
fevers, proved by the symptoms and the ap-  
pearance frequently presented after death,  
and, that the affection is identical in its  
spots and phenomena, its rule for curing  
and the structural lesion leaves behind  
the marked and acknowledged phrenitis or



inflammation of the brain, Dr Clutterbuck's views made but very little impression, it scarcely attracted general attention until it was brought forward by the claims of a more celebrated author to originality in the denial of idiopathic or essential fevers. In maintaining the existence of essential fevers, it is not necessary to support the notion of universality in the action of its cause. Some causes act locally on one organ exclusively, and again others act generally on several organs, and some universal-ly on all. We propose to give some argument in favour of occasional independent excitement or idiopathic nature of fever. Fever is a general disease, the sanguiferous system being generally and entirely disordered, The morbid vascular excitement of fever is located essentially in the

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capillary system of blood vessels consisting in irritation and not mere decreased or increased action. This irritation and excitement may be the cause acting directly on the internal surface of the sanguiferous system or irritating impressions transmitted sympathetically from another source of irritation. The first point of morbid plenissima which occurred in the development of fever always commencing in the nerves. The ~~distand~~<sup>induced</sup> or exciting cause of fever nearly produces local inflammation before the development of the general and febrile reaction. Their actions are stricken to the productions of morbid impositions on the nerves, which penetrated to the brain commonly causing a temporary depression on the energies, and of course there would be a disturbance of equi

librium in the nervous energies, at the same time that the morbid impressions reflected by the brain throughout the system contributing to the functional diseases and irritation of certain internal <sup>inflammation</sup> organs, We do not think that topical, is not essential to the production and support, yet in many instances of idiopathic or general fever, more or less inflammation supervenes after the febrile reaction is established and sometimes the development of the febrile excitement and local inflammation is simultaneous.

Knoxville, Jan 26<sup>th</sup> 1857.

I respectfully submit, this  
Paper, to the Dean of the Faculty.  
W. F. Chrisman. *Recd*