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The Principals of Medicine.

Before proceeding to the consideration of disease, & the application of remedies it may be necessary (without entering into minute anatomy) to take a view of the apparatus which supports the life of man. consisting of the heart. Stomach. intestinal canal. absorbents. blood vessels & nerves.

The heart is the small muscular organ placed within the thoracic cavity for the purpose of propelling the nutritious fluid to all parts of the body. it is an organ eminently endowed with the property of irritability. capable of being easily excited to contraction alternating with relaxation. subject in its action to nervous influence. but not dependant upon nervous influence for its action. its movement consist in contraction & dilatation, the systole or

contraction corresponds with the projection of blood into the arteries (giving the pulse) while the diastole or dilatation coincides with the collaps.

The heart may be considered as two, the right & left, both of which contains blood. that of the left is thrown out at each contraction, & returned by the ascending & descending Vena Cava to the right auricle during its diastole, which contracts & forces it into the Ventricle & is thrown by its systole into the lungs; after having circulated ~~through~~ There returns as arterial blood by the Veins into the left auricle, thence into the Ventricle from which it is thrown out to all parts of the system. this constitutes what is called the circulation.

The food swallowed is digested by the action of the gastric juice in the Stomach & is converted into a mass called Chyme, which passes on into the intestine, where it is subjected to the Biliary & Pancreatic secretions, which effects an immediate alteration

separating the extraneous matter assisted by the peristaltic motion of the muscular coats, excited probably by the contact of the mass, or the secretions mixed with it, a whitish liquid being disengaged, called Chyle, constitutes the new nourishment, which is absorbed by Vessels called lacteals in consequence of the white appearance of their contents. these Vessels conduct the nourishment into the Veins near the heart, where it unites with the old Venous blood, as it returns to the right heart, from whence it is sent through the Lungs to be purified, returns to the left heart, as new arterial blood & is sent out to supply the demands of the system.

The removal of parts, supply of secretions, the growth & repair of bone, muscle membrane &c the formation of bile saliva mucous & other secretions, is carried on by the extreme minute branches of blood vessels, & while they preserve their proper tone, all goes on well, but when their action is deranged disease commences,

The colour of the blood is caused by red

particles being diffused through a transparent fluid, (Liquor Sanguinis) composed of serum holding fibrine & other substances in solution. Some capillaries are so small as not to admit of many of the red particles unless enlarged by inflamation.

The body is nourished by the arteries depositing in the parts the various constituents of the blood which is sent through them by the heart, & in this way muscle bone membrane &c are nourished, the blood containing the constituents of each, fibrine for muscle, bone & for bone albumenous watery fluid to form membrane to supply & exhalations, which are essential to lubricate serous & mucous membranes.

A consideration of the phenomena resulting from these depositions, will assist us in the understanding of disease & the application of remedies. We cannot ascertain exactly how the depositions are originated; do arteries build up bone merely by the addition of homogeneous matter, & are the secretions & exhalations

modified by the calibre of the minute branches admitting only the vapour parts to the surface of the serous membrane + skin, whilst they permit the transparent fluid part of the blood to pass to the mucous surfaces + keep back the red particles. This mechanical explanation might suffice in part. but when we come to nutrition, the renewal of muscle + the formation of peculiar secretions, we must look for some still uncomprehended agency which modifies the materials conveyed by the whilst they are depositing, even with respect to the deposition of bone, this agency is required to solidify the new particles which are fluid in the blood. This can be no other than Chemical power, the process of chemical precipitation by which new matter is deposited + decomposition by which old matter is separated + carried off by the absorbents. Thus the support in health + change in disease proceeds. in this investigation we might make considerable advances, yet the ultimate principals upon which Organic

life depends is far beyond the power of human minds, it is true we may analyze bone, know its composition, explain how bony matter is deposited by precipitation from the blood, we know that the shape depends upon the membranous mould in which it is cast; but we can go no farther & must conceive an innate wise cause, who allows us only the phenomena by which we may judge how in many instances we may avail ourselves of means by which we can regulate the complicated machinery into which he has breathed life.

The deposition is a combination of chemical precipitation & chrystalization modified by Vital action, when there is periosteal membrane we see that it keeps up a vital state of the bone, & when there is no membrane as in fracture the surrounding parts decide the form of the callous which unites it.

During health the capillary arteries continue their work of nutrition & secretion, muscles

are fed, mucous surfaces are lubricated just sufficient to prevent any sensation from substances which pass along them. The serous surfaces are made moist so as to slide easily ~~along~~ upon each other without sensation. The skin is kept moist by an insensible Vapour & during all this there is another very essential process going on — the removal of superfluous matter by the absorbents. If it were not very serious & inconvenient accumulation of what is deposited by the arteries would be poured into the serous cavities, producing dropsy. Thus we see that the absorbents take up the nourishment from the food to supply the demands of waste, & also take up the particles which become superfluous according as the arteries deposit fresh matter. & these absorbents like Lacteals, mix their contents with the old blood to be repurified. We can by reference to Chemical action account for the removal of solids also, for solids become fluid by what is called

spontaneous decomposition & thus removable by absorbents. when bone is healthy it is protected from the action of solvents by its membrane, but when caries from disease there is an extravasation of serous fluid in contact with it, which assist to dissolve it. & when dissolved is carried off by the absorbents. The removal of bone by pressure of an aneurism absorption is effected by pressure not upon bone, but upon the vessels composing them & thus stopping the supply of nourishment, & the bone when dead becomes decomposed & is carried off by the absorbents. Arteries are endowed with the power of contracting upon their contents, so as to contract full, even when a considerable quantity of blood has been lost. This contraction of the arteries is distinct from the contraction of the heart. the contraction of the heart is muscular while that of the arteries are elastic. The heart contracts & relaxes alternately. The arteries keep up a constant contractile pressure on their contents. both longitudinally

+ transversely, which is overcome by the contraction of the heart; + when there is much blood sent into them they dilate, if little blood be given them this tendency causes them to close so as always to keep full + to preserve a continued stream of blood, even during a temporary relaxation of the heart + the arteries yielding + adapting themselves to the pressure of the heart + recontracting on their contents while the heart is relaxed, is the cause of the equability of the stream in the veins.
The stream in the arteries is much less even than we are apt to suppose, judging from its flow from a wounded artery. Although there is an unequal stream caused by the impulse of the heart, yet it must be remembered that in a tube unwounded, that force must be partly expended in expanding the arteries, whereas when wounded it ceases to be other than a simple tube, the elasticity not being called into operation in consequence of the escape of blood from the wound. By anatomical investigation we learn that arteries veins of every size, + absorbents are the apparatus

of every process of growth in health & removal of the swelling & wasting of parts in disease, but we must not forget, & it is a circumstance to be recurred to always, both in theory & practice, that nerves accompanying arteries throughout complete the apparatus.

The nerves are distributed to every part of the frame, however minute, all communicating with the brain, for the purpose of conveying the order of the will from the head to the muscles of voluntary motion, supplying to all parts nervous influence, which excites action, but when I speak of nervous influence, I have reference to the spinal cord & the sympathetic or ganglion system as well as the brain. We have reason to believe that the nervous influence is generated or secreted in the more vascular. Cineritious (gray) part of the nervous system & conducted by the Medullary (white).

We have a great central organ or ganglion & a set of trunks & ramifying branches, connecting this ganglion with the different parts

of the fabric, these branches are distributed on the one hand to the sensory surfaces or organs, on the other to the muscles or Motor organs, the former serves for the conveyance of impressions made upon the periphery towards the centre + are called (Afferent) the latter serve for the conveyance of influence originating in the Centre ganglion, to the muscles which are thrown into contraction (+ are called efferent or motor).
That the nerves exert a direct influence upon organic function will not admit of dispute. This influence is exerted sometimes in exciting sometimes in checking, + sometimes in modifying them. These actions are manifested in cases of severe injury, as concussion of the brain or Solar plexus + does not only produce a suspension of respiratory movements + others which minister to organic function, + hence a gradual stagnation of the latter, but a sudden + complete cessation of the whole train of action, which cannot be attributed to any other action than a positive depressing influence of some kind, propagated through the nervous system.

Muscles & arteries though differing in tissue, have each an element in their structure a faculty of contraction. This contractility being acted upon by a nervous influence & the result is contraction nervous influence being discharged into them by nerves, & this discharge may be produced in a variety of ways, as by blood in the heart & capillaries & the presence of food in the intestine. The nerves exert an influence in the generating of animal heat. There is a perpetual deposition by the capillary system of nerve matter & decomposition of old all over the frame, influenced by the nerves. in this decomposition there is a continued disengagement of carbon mixing with the blood returning to the heart, producing a constant elevation of caloric. & again in the lungs the carbon is thrown off & uniting with the oxigen during which caloric is again set free, in this way animal heat is kept up. on the other hand the evaporation of perspiration keep the surface cool. But in inflamatory fevers where this is deficient the surface becomes hot. & in low fevers when the nerves are debilitated

The surface falls below the natural standard. Whatever nervous influence may be & however generated we know that the energy of parts depends upon something that is communicated to them by the nerves in conjunction with the ganglia, Brain & Spinal Cord. That while parts are supplyed with this influence they retain their power of action. not longer. That arteries become less susceptible of impression from external agents when the nervous energy is low, that when the vital powers are sunk, the capillaries cease. That the various phenomena in healing in inflamation are effects of healthy action of the heart & arteries. The action of arteries as we said before is contraction & it is a very common saying that in inflamation there is an increase of arterial action. but a consideration of the phenomena of arterial action will show that in inflamed parts the capillary arterys are weaker in their action, & that there is diminished arterial action. for the action of arteries is contraction & the arteries in inflamed parts are evidently larger & less con-

-tracted than before; hence an inflamed part is redder. as in the eye we see that the redness is caused by an enlarged condition of the minute vessels admitting more blood. This enlargement is not from increased action but on the contrary this action being diminished, they give way & become dilated by the injecting force of the heart. & thus the way to diminish the inflamation would be to increase the action of the arteries, as by cold astringents, so instead of there being increased action there is diminished action & one way to diminish inflamation is to increase the action of the vessels of the part. it is supposed that the heart is acting with increased energy from the fact that we have to resort in some cases to blood letting. but that is a mistake as the arteries do not have to bear any more force from the heart, than before the injury, but the capillaries being debilitated & relaxed yield to the injecting force & receive a greater quantity of blood than before, & which being so much debilitated as not to be able to recover of themselves or by the aid of astringent lotions, hence it is

necessary to decrease the quantity of blood sent to them, by the sedative operation of bleeding. yet this can be done by the internal use of sedatives as digitalis &c

As remedial agents too long or too powerfully applied become noxious by exausting the vitality & impact wearing out or straining the machinery of the organ so that it can no longer answer to the nervous influence, whether it be a capillary tube or any other structure, & as remedies have received their respective classifications in reference to their properties & modes of action it is necessary highly important that we should keep constantly in our minds the distinctions between them. And here I propose to take them up & notice particularly the distinctions between. Stimulants. Tonics. sedatives & narcotics, there is some difference of opinion in regard to the action of these remedies particularly the two first, there are those who use the terms synonymously

A stimulant is that medicine which increases the action of the heart & other organs. through

The medium of the nervous system.
The effect of a stimulant is referable to two operations upon the brain & nerves & upon the heart & capillaries, each of these systems the nerves & circulatory is effected by a local & general operation of the stimulus upon their respective centres;
Brandy for instance when taken into the stomach is absorbed & carried into the circulation, comes in contact with the internal surface of the heart & acts as a local excitant upon that organ & probably its influence is sympathetic. through the solar plexus of nerves passing between the stomach & heart thus excites it to increased action.
The stimulus mixed with the arterial blood is propelled to the brain, which becomes excited to a more rapid distribution of nervous influence. Respiration & the function of every organ seem to be more energetic, a more copious supply of arterial blood is imparted to the nervous centres the sensorium is excited to cheerfulness & all impressions of the senses is more acute, the generation & flow of ideas is accelerated, these are some of the effects of moderate quantities; when taken in excess the phenomina

is the reverse. The brain is poisoned, the nervous principal which it contains is expended, so that the capillaries from an exaustion of the nervous influence, becomes more distensible. The imagination is rendered dull, perception & ideas are confused, The brain is overpowered with arterial blood, from the increased action of the heart, the capillaries are over injected, & secretion is diminished, but a mere increased action of the heart, is not sufficient to produce over injection, unless the local effect of the stimulus upon the brain by increasing the distensibility of the capillaries, take place simultaneously, the over injection will lead to febrile excitement, the secretions in every part being diminished in consequence of a want of nervous energy & stupor and fatal apoplexy may be the result, such are the effect of stimulants given to persons in health. The effects we witness in disease are similar, yet modified by the disease. Stimulants are divided into diffusable & local, they may all be said to be in a degree diffusable, as all mix with the blood & become diffused through the system.

Chloroform, Ether & alcohol are the most rapid & widely the most diffusible, phosphorus & ammonia are said to be diffusable. There are stimulants of a mixed kind, The essential oils, camphor, & ammonia act first upon the stomach, then the heart & other organs through the communication of the sympathetic nerve, though acting thus as a local & sympathetic stimulant, is so rapidly combined & changed chemically that it does not circulate unaltered as other stimulants. Sedatives, are those medicines which diminish the action of the heart & other organs by repressing the nervous influence, it is said that sedatives are only the secondary result of exaustion from stimulants, from the fact that the pulse grows quicker under the use of sedatives. This is a fact we cannot deny, so it does under venesection, the pulse becomes quicker as the patient grows faint, a mere increased frequency of the pulse is no proof. as no person will call bleeding to syncope, a stimulant. In complaints of an inflamatory character, the pulse may become more frequent, fuller, & harder, during the administration of

sedatives. This effect is not produced by the remedies for the patient may not take enough. bleeding being neglected, or the inflamation being uncontrolable by any treatment. many inflamations require 2, 3 or 4 bleedings the first being ineffecient, the pulse becomes harder until the 2 or 3 softens it, the same thing occurs in similar cases with our sedative remedies, we should beware of attributing to remedies, the change of pulse depending the progress of disease. Sedatives in large & continued doses, produces merriment, anxiety, depression & despondency. allaying the action of the nervous system, so as to prevent them directing the muscles, the patient becomes giddy & tottering, the retina becomes weakened so as not to see distinctly, he reels & sees double, the same occurs from the loss of blood. it is well to be aware that opposite states may produce similar appearances, & the remedy which would cure one would not afford relief to another. The coma of Children which proceeds from inanition, & which might be mistaken for fullness of the internal vessels. is relieved only by stimulants. Delerium tremens has likewise many symptoms

of disease, cured by Venesection + sedatives, but which requires stimulants combined with narcotics
Sedatives as opposed to stimulants diminish the injection, + at the same time repress nervous influence, so that the cause of delirium stupor + coma from sedatives is inanition, whereas, the cause of delirium stupor + coma from stimulants is congestion or plethora:
Narcotics the narcotic principal of medicine diminish the sensibility of the nervous system, depress the perception of external objects, + checks volition, thereby promotes sleep + allays pain.
Stimulants promote sleep under certain circumstances, but do not allay pain + neither until they begin to oppress the sensorium.
narcotics on the other hand allay pain + produce sleep, without oppression of brain or increase of pulse. Narcotics should be distinguished from stimulants on the one hand + sedatives on the other. Digitalis a direct sedative + brandy a direct stimulants neutralizing each other cannot be expected any combined effect but Opii a narcotic Anodyne may be usefully

employed according as a sedative or stimulant is required. Stimulants promote the extrication & expenditure of nervous influence as evinced by increased action, sedatives the reverse. Narcotics do not appear to alter the quantity of nervous influence, but merely to impede its communication. Morphia for instance prevents the perception of pain in a part, produces disinclination to muscular action, does not alter primarily the heart's action, like brandy or digitalis. But will render it sluggish by retarding by innervation & become secondarily sedative, Narcotics interrupt the conducting power of the medullary matter, evinced by their influence over the brain & spinal cord, There is a marked difference in the action of some narcotics, partly owing to the manner in which they are used, Belladonna may be used as to prove stimulant narcotic diuretic & diaphoretic. Stramonium & Lobelia besides diminishing sensation, produce sickness & consequently are not used as hypnotics. To produce sleep, because their local effect is so distressing that they cannot be employed in sufficient quantities to effect the brain through the stomach & circulation, Opium & its preparations are the most certain & reliable hypnotics that we can use Hyoscyamus,

is preferred by many as an anodyne, others have been recommended but none are equal to the preparations of opium. The true guide to the use of hypnotics is to ascertain what treatment whether sedative, stimulant, tonic or their combination should be used in conjunction with them. If opii be given when the skin is hot & dry with permanent thirst & other symptoms of pyrexia proceeding from some inflamatory affection, the patient will be precipitated into a sleep from which he will wake still feverish thirsty & unrefreshed. But this would not be so much the fault of the opiate as that other means had been neglected, such as the necessary sedative means, whereas had they been used, either before or simultaneously, relief would have been given. Opii & its preparations may be considered anti-phlogistic, though not sufficiently so to be relied upon alone, yet by retarding the heart's action by innervation, becomes secondarily a most useful assistant in the antiphlogistic treatment, & should always follow blood letting in a majority of cases of inflamation, either combined with sedatics or diaphoretics as the case may require, some persons are made extremely sick by calomel or opii, with these

they would act as antiphlogistics. There are others whose stomachs will bear them without the slightest inconvenience, here it would not prove antiphlogistic or not sufficiently so to control inflamation. hence in inflamation as pleurisy, peritonitis & the such like bleeding premised there are to follow,

TONICS. are remedies which neither immediately nor sensibly produce action like stimulants, nor repose like sedatives. but give power & tone to the nervous system to secrete the nervous influence, by which the whole system is strengthened. the action of tonic is gradual, elevating the system by degrees, from a debilitated to a sound & healthful condition. some tonics as well as stimulants & sedatives, do harm when used in too great quantities. become poisonous. Arsenic & sulph Copper as poisons produce inflamation, yet these results must not be expected, when use with a view to their tonic effects. with caution as tonic is only a modification of vital action, & poison a destruction of the whole machinery. Nitrate of silver when properly used cures heal, but when injudiciously used it will corrode, in some cases by temporarily exciting the nervous system. with stimulants we increase the power of the digestive,

organs, & prepare them for the reception of nourishment. which increases the strength of the nerves. & thus stimulants & generous diet form a part of the tonic plan, & it is in this way that stimulants are administered with tonics. that they are said by some to be stimulants. Tonics being neither stimulant nor sedative, may be usefully combined with either, whether we wish to keep down the pulse in inflamation, or to raise it in debility; it must obviously be desired to give tone to the nervous system. because tone & strength ~~and~~ to the nervous system will not increase the hearts action, unless it be called forth by stimulants; Tonics give strength & stimulants call it forth, we need not fear to keep the nervous system in tone by tonics, but beware of exciting over action with stimulants, when inflamation or fever exists. for stimulants excite action & over action increase exaustion. The constitution may sink under depletion necesary for overcoming inflamation, if tone be not kept. This may be done without stimulation. but when the pulse is greatly below the natural standard & the whole system sinking under the influence of fever, we may then with propriety use them combined, Tonics such as quinine by imparting energy to the capillary system may be used. though bleeding & other sedatives are necesarily used to keep

down the action of the heart yet those tonics may be beneficially used to prevent the system from being so much reduced as to go beyond our reach. There are cases of inflamation in which bleeding, purgatives, emetics & other sedatives & antiphlogistics are totally inadmissable. when the constitution is sinking in these cases, we have recourse to calomel or guiacine combined with calomel, Opii. camphor, together with some mild diffusible stimulant. as to the propriety or impropriety we must be governed by the characters in which disease are presented. When we speak of remedies as stimulants, tonics, sedatives &c we mean in relation to their moderate action effecting the natural powers of organs, & not their exagerated or poisonous effects when they begin to excite inflamation or morbid sensibility, or when they suspend function as sedatives do in excess. intoxicating liquors taken in moderation acts as a stimulant upon the nerves of the stomach & other parts. & in great quantity is injurious destroying the susceptibility of the stomach, a sedative effect being communicated to the nerves of the heart gives rise to sickness. cold sweat, weak pulse. Though wine & brandy are stimulants, yet they will prove deceptive according to the cause or state of disease. inflamation making the pulse weak in consequence of its severity. Brandy by increasing the.

inflamation would in the ultimate weaken it's tolerance, while on the other hand sedatives as bleeding & antimony would raise it by reducing inflamation. In simple inflamation when the brain & spinal cord are not sympathetically effected & the hearts action as measured by the pulse is unaltered. The function of the intestines & kidneys goes on as before. The capillaries generally recover of themselves or with little assistance as by the application of cold lotions. they contract to their natural size & inflamation gives off. But there are greater degrees of local injury when the cappillaries suffer so much debility, that they cannot recover of themselves nor by the aid merely of local applications. constitutional disturbances arise, with first symptoms he feels chilly. restless. general sense of uneasiness. increased action of the heart. the pulse becomes more frequent fuller & harder. lassitude comes on with headach. wandering pains in the limbs. he is unwilling to exert himself. his sleep is disturbed. loses his appetite. secretions are deranged. all shewing that the nervous system is partaking of the morbid sensibility of the nerves of the inflamed part. The irritability of the heart being increased renders it more susceptible to action by the ordinary stimulus. The absence of sleep sometimes is attributed to pain. but is most frequently owing to the irritated condition of the nerves.

In this instance the most marked symptom is the increased force of the heart, & as this tends to keep up & aggravate the disease. The indication would be to diminish its action & guard against its renewal: to accomplish the first we take blood either by venesection or as many leeches as the urgency of the case may require; by the latter we lower the pulse & relieve the local congestion, & having done this the second indication is answered by avoiding everything that is calculated to raise it, as exercise & generous diet; rest & low diet are among the essential parts of the antiphlogistic treatment. But in addition we use our sedative medicines antimonials & mercurials in small & repeated doses & should the bowels be constipated give purgatives not only to evacuate the bowels, but with a view to their sedative effects, as this constitutes their usefulness in inflammation, more than a mere evacuation of the bowels. We have medicines with which we could stop the action of the heart entirely, yet their influence is not so manageable as to justify us in substituting them for bleeding. The relief from bleeding is usually instantaneous, whereas it requires hours for medicines to produce this effect, & when too rapidly introduced into the system & begins to reduce the pulse, are apt to produce too great,

a depression. in accute diseases they may assist & even supersede bloodletting, when on the other hand they are used with benefit in cases where blood cannot be spared.
After inflamation has been subdued by bleeding, Opiates are frequently used with with benefit to allay the morbid sensibility which may remain & support the system under injury during the reparative process. but here the case must be closely watched for febrile symptoms. lest the anodyne deceive us by allaying pain & the inflamation rise as it certainly will, unless the proper means such as antimony, digitalis, aconite &c be used to keep it within bounds & (as we are directed) should be used in graduated & by no means in full doses.
we should remember that when the nervous influence is great, as in health there is less tollerance of medicine than in disease. in health a small quantity would have the same effect, that a much larger would in disease. & a small dose of a depressing medicine given to a sound healthy person, will produce a depression far greater, than when given to a person laboring under inflamation. & a healthy person will be purged by a small cathartic dose, when it

will require from two to 3 drops of croton oil in some cases of fever & this is the case with sedatives, narcotics, tonics & all remedies. hence we should be guided by the disease, state of the nervous system, by the effect desired to be produced.