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OSTEOPATHIC PHILOSOPHY OF THE CAUSE OF DISEASE.

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Osteopathy is distinguished from all other systems of therapeutics, not by reason of its manipulative method, but by reason of the fact that it has discovered and verified an entirely new philosophy with reference to causative factors in disease.

Osteopathic philosophy of the cause of disease is the foundation upon which the science stands as an independent system of therapeutics, hence the importance of maintaining this distinction.

The purpose of this paper is to draw attention to a few fundamental anatomical and physiological principles which we think clearly justify osteopathic reasoning along the line of cause and effect in disease. We trust we may also, in a measure, emphasize the fact that osteopathic philosophy of the cause of disease is the pre-eminent characteristic of the science.

Before taking up the discussion of causation in disease, we deem it necessary to refer briefly to certain essential factors and principles concerned in the maintenance of life and health.

MOTION THE CHIEF MEANS FOR MAINTAINING PHYSIOLOGICAL HARMONIES.

For the vital energy which affects the physical and chemical processes in which life consists, our attention is necessarily directed to the body-cells. If it be true that cells are the actual constituents of the organism, then the vitality of the body depends upon the vitality of its cellular elements. Hence, the phenomena of life are exhibited in cells, and the *activity* of cells constitutes the basis of physiology.

Without reference to the constituency of the cell, we pass to its function, but deem it unnecessary to deal variously with even this feature, for it matters not what may be the special office of a cell or group of cells, the performance of work cannot take place without *motion*. Motion, therefore, is the primary and most obvious function of the cell.

If we refer to muscle-cell, the very term implies movements of contraction and expansion. The nerve-cell, which originates vital force, and in response

to stimuli projects its branches or dendrites in order to complete the circuit for the transmission of impulses which control the working of muscles and organs, is engaged in movements of extension and retraction. Who can measure the physiological achievements of the amoeboid movements of the blood cell? The gland cell, with its power to select or extract certain elements from the blood and to reject or excrete what is not needed in the animal economy, is a perfect type of rhythmical movements.

What is true of an individual cell applies equally to a group of cells, including not only the various organs of which cells compose the principal part, but also those in which muscular fibers predominate, such as the heart and uterus.

It is a well-known law in physics that an eqilibrium or given effect is dependent upon a certain relation between accelerating and retarding forces. Is it not a physiological law that functioning organs are under the control of accelerating and retarding forces?

The alternate contracting and expanding movements of the lungs, heart, spleen and other organs is universally conceded. Indeed, can it be denied that every organ in the body has rhythmical movements? While this has not been clearly demonstrated in a few instances, the very nature of cells implies that there are no marked or important exceptions; for the function of an organ is the function of the cells which enter into its composition.

In view of these facts, are we not well within the bounds of a reasonable premise when we assume that Nature adopted motion on the part of structure as the chief means for maintaining the physiological harmonies of the body? Indeed, we stand committed to the theory that "all bodily processes, except osmosis, are accomplished by motion of structure."

BLOOD AND NERVES CONTROLLING FACTORS.

The importance of blood-circulation for purposes of nutrition, on one hand, and the removal of waste and worn out material, on the other, is well known; as well as the importance of the nervous system in originating and transmitting impulses which control the activities of the various glands and tissues.

The presence of fresh food in an organ, or nutrient material in any part, acts as a stimulus to the afferent nerves involved. Whereupon the central nervous system discharges impulses over the efferent nerves which excite the organ to action and regulate its rhythmical movements.

While the vascular and nervous systems are dependent upon each other, it must be remembered that the blood-stream is under the control of the nervous system, not only indirectly through the heart, but directly through the vaso-constrictor and vaso-dilator nerve fibers, which regulate the caliber and rhythm of the blood-vessels. To illustrate: Experimental physiologists have demonstrated that to sever the renal nerves produces dilatation of the renal arteries, causing an increased amount of urine; while irritation of the renal nerves produces constriction of the renal arteries, causing a diminished quantity of blood to the kidneys, resulting in a diminished amount of urine.

It will hardly be denied that all organs are supplied with both accelerator and inhibitory nerve-fibers. Although we are not able in many instances to locate these respective nerve impulses in separate nerves, as we do in the case of the accelerator sympathetics and inhibitory vagi to the heart, yet it is well

known that the central nervous system gives origin to both varieties of fibers, and even when contained in the same nerve their respective origins and impulses remain distinct.

The blood-vessels and nerves, therefore, contain the vital fluids and forces indispensably necessary in the performance of the physical and chemical processes of the body. The nervous system comprises the master tissue, and originates the accelerator and inhibitory impulses which produce and maintain the rhythmical movements on the part of structure primarily essential in the performance of normal organic function.

RELATION OF STRUCTURE AND FUNCTION.

In considering the relation of structure and function we subscribe to the doctrine that "structure determines function"—that function can be affected only through structure. While it is true that function and structure are dependent upon each other, function presupposes structure. If it be urged that function produces structure, it must be admitted that the product is the result of structure in action. Hence, function is the vital manifestation of structure, and abnormal function implies abnormal structure. Therefore, derangement or disturbance of structural elements or conditions is the cause of derangement or disturbance of function.

CAUSATIVE INFLUENCES.

Age, sex, race, climate, season, lack of exercise, uncleanliness, impure air, etc., as causative influences, are not sufficiently germane to the subject to require consideration. We desire, however, to refer briefly to heredity, poison, indigestion in diet and exhaustion from overwork or overuse.

HEREDITY—Not only is an organism more or less subject to the form, function and inherent vitality peculiar to its progenitors, but congenital structural defects, apparently not characteristic of a progenitor, are occasionally found.

POISON—If an overdose is taken, the system is unable to eliminate it before it inflicts great injury to the tissues. Hence, the prompt administration of an emetic is necessary, as well as an antidote to counteract the poisonous effect. If poison enters the system in small quantities for medication, or otherwise, its effect is gradual; and if the excreting organs are normally active, it is gradually eliminated. If, however, the eliminating organs are impaired or hampered in their natural tendencies, the poison may become an exciting cause of disease, a previous impairment constituting a predisposition.

BACTERIA—We regard bacteria as a secondary or exciting cause only. A primary derangement or predisposing cause, which vitiates tissue and impairs the resisting powers of the system, must first be present. It is not the pathogenic organism that injures tissue, but its toxins. It has been demonstrated that the most terrible bacillus, if taken from the media in which it is bred and thoroughly cleansed with water, has no power to produce disease. Bacteria promote disease when the environment is suitable for their propagation, but if the system is in a normal condition, it is immune against their ravages. Hence, the derangement which produced the soil suitable for the propagation of bacteria is the primary or predisposing cause, and the bacteria the second or exciting cause, in infectious diseases.

INDISCRETION IN DIET.—This is largely, if not altogether, a secondary or exciting cause. It is well known that the ingestion of a certain article of food may be followed by an attack of cholera morbus in one individual, while in the case of another no ill effects are experienced. Hence, "what is one person's meat may be another's poison." There are but few perfectly normal digestive tracts, and to say that a certain article of food is a primary cause of disease, is at least subject to much criticism, and often contradicted by facts. The digestive organs of many individuals are known to easily digest a certain article of food at one time, and at another suffer a severe attack of indigestion, which implies that a predisposing cause was active in the latter instance and not in the former. We are decidedly of the opinion that indiscretion in diet, as a causative influence, depends upon a pre-existing impairment of some point in the digestive tract.

EXHAUSTION—It is possible that continuous overwork or overuse of the body, or of an organ, may so deplete vitality as to become a predisposing cause; as under such circumstances the resisting of recuperative powers of the system may be very much lssened, whereby exciting causes act more easily. Such a degree of exhaustion, however, very seldom occurs, without a pre-existing weakness at some vital point acting as a predisposing element. It is a very rare and urgent instance where people overwork their bodies or organs to the extent that exhaustion becomes a primary factor in disease. Nature is very watchful, and seldom fails to warn us, in terms that we can hardly refuse to heed, that we have reached the limit of her abilities and must rest that she may repair. It is reasonable that constant overuse of an organ may be attended by increased growth. Such growth, however, does not necessarily constitute an abnormal condition. We very much doubt if an increased growth of the heart, to compensate for increased work, would ever become a pathological condition, if there were no lesion affecting its innervation. An enlarged organ may cause disease by encroaching upon other organs or parts, restricting their rhythmical movements or interfering with their blood-supply.

PRIMARY OR REAL CAUSES OF DISEASE.

We now come to a consideration of what we regard as the primary or real causes of disease. We refer to them as structural irregularities, defects, deangements or lesions, such as dislocation or subluxation of bony structures, displacement of organs, muscles and ligaments, resulting from falls, blows, strains, etc.; contractured muscles and ligaments, resulting from exposure to cold, dampness, etc.; alteration in the relation of structures, resulting from continued abnormal posture, either in the pursuit of vocation or carelessly assumed.

It will be noticed that structural lesions are produced by at least one of the three following agencies: accident, exposure and abuse. We do not refer to these agencies as causes, for the reason that they produce a structural derangement which must be regarded as the cause of the disease that follows.

The specific for disease is removal of the cause. Hence, the thing removed, to accomplish a cure, must be considered the cause. That an accident is in the past tense, does not dissipate the ill effects resulting from trauma. To discontinue a vocation that produced alteration in the relation

of structures, does not eliminate the consequent disease. To remain in doors, after exposure to cold, does not remove the cause of a resulting bronchitis.

To say that a case of tonsillitis was caused by exposure to cold, we regard as incorrect from an osteopathic viewpoint. To remove the exposure does not cure the tonsilitis. The exposure, as an agency, produced, we will say, contraction of the cervical muscles, and the contractured muscles caused tonsillitis by affecting certain nerves and stagnating the blood-supply of the tonsils. Correcting the abnormal muscular condition resulted in a cure. Hence, the contractured muscles was the cause.

Structural defects or derangements are at least predisposing causes; that is, while they may not produce sufficient disturbance to constitute disease, they render the system susceptible to other causes. They are liable at any time to act strongly enough to cause a departure beyond the physiological limit, and if they do, they at once become exciting, as well as predisposing causes.

We hold that structural defects may be "lesions" in the osteopathic sense without being sensitive to pressure. As predisposing causes, they are not necessarily sensitive; but there are perhaps but few exceptions to the rule that when they act as exciting causes tenderness is present.

When some other influence, such as bacteria, for instance, is known to be the exciting cause, and a structural derangement exists in a region implying that it is the predisposing cause, although not tender to pressure, the logical osteopath would undoubtedly endeavor to correct it. The fact that treatment was applied to the structural defect constitutes it a "lesion" in the osteopathic sense, since the purpose of osteopathic treatment is the correction of a "lesion."

Osteopathic prophylaxis implies the correction of structural irregularities regardless of sensitiveness. Hence, to refrain from correcting a structural derangement because it is not tender to pressure, especially when situated in a causal region, seems as unreasonable as to defer the filling of a decayed tooth until it begins to ache.

HOW STRUCTURAL LESIONS CAUSE DISEASE.

The effect of a structural lesion is pressure on adjacent tissues. If the derangement be a rib-lesion it may press directly upon lung-tissue and prevent proper expansion or rhythm of the organ. A depressed clavicle may impinge the blood-vessels and nerves which pass under it. Torsion of a cervical vertebra may exert more or less pressure on the vertebral artery where it passes through the foramen of the transverse process, and thus affect the circulation to the brain.

Bony lesions, as a rule, especially such as a hip-dislocation, vertebral and innominate subluxations, draw the softer tissues out of line, and this disarrangement or tension of the ligaments and deep muscles causes an abnormal pressure of the associated blood-vessels and nerves.

When we speak of pressure on a blood-vessel we do not necessarily mean that the vessel is entirely occluded. Such a condition would of course result in gangrene. A very little abnormal pressure, however, will lessen its lumen and exert a marked influence on the part nourished or drained by it. Pressure on an artery causes anemia of the part it supplies; pressure on a vein causes hyperemia.

It must be remembered that if there is sufficient pressure on an efferent nerve to impair its activity, the result is degeneration of its fibers and a consequent paralysis or atrophy of the part it innervates. But, that nerve-fibers will stand sufficient impingement to at least irritate them excessively, there is no question.

While a great many structural lesions involving nerves act by direct impingement, causing excessive accelerator or inhibitory impulses, according to the function of the fibers or center involved, the majority of lesions, especially spinal, more than likely first interfere with the blood-supply of nerve-centers by compressing the arteries or veins. In this way the trophic, as well as the accelerator or inhibitory influences of a nerve-center, are impaired for want of nourishment, or are exaggerated on account of cell-irritation by stagnant blood.

We regard contractured spinal muscles and ligaments, resulting from atmospheric influences, as a very prolific source of disease. These contractures often disappear under the reactive and self-adjusting powers of the system, but not unfrequently persist, and ultimately affect the metabolism of nerve-cells in the manner just indicated, or by impingement of afferent nerves. Thus, in either event, abnormal impulses originate and pass out through the efferent nerves to the periphery cells and disturb the harmony or rhythm of the organ or part involved.

Spinal lesions, therefore, cause disease by involving the blood-vessels and nerves, either preventing proper nutrition of nerve-centers and consequently weakening their impulses, or, through the medium of stagnant blood or impingement of afferent nerves, irritating nerve-centers and consequently exaggerating their impulses.

If (according to experimental physiologists) irritation of the cardiac sympathetic nerves increases the force and frequency of heart-action, and section of the same nerves diminishes it, is it not reasonable that a structural lesion in the region of the first to the fifth dorsal vertebrae would either irritate or inhibit this same center, causing increased or diminished accelerator impulses, and thereby disturb the heart's rhythm?

If stimulation of afferent nerves in certain parts of the body will stimulate the inhibitory center in the medulla and cause slow heart-action, does it not imply that a lesion in the cervical region could send stimulating impulses over afferent fibers to the same center and cause the same result?

If irritation of the splanchnic nerves causes relaxation of the muscular walls of the stomach and intestines and lessens their movements, is it not proof that a structural lesion in the splanchnic region may cause an irritation that would impair the rhyythm of the organs in question?

A splanchnic lesion, on the other hand, could so weaken the sympathetic nerves that the vagi, the motor nerves, being unopposed, would cause excessive peristalsis.

Physiologists tell us, also, that irritation of a certain vaso-constrictor nerve-center causes contraction of certain blood-vessels, resulting in anemia of the organ involved; and that section of the vaso-constrictor fibers (which leaves the vaso-dilators unopposed) causes dilatation of the blood-vessels, resulting in hyperemia. In view of this, is there any question but that a structural lesion irritating the vaso-constrictor center, or weakening the vaso-dilator impulses, would cause contraction of the blood-vessels and result in

anæmia of the organ? Or, that a lesion irritating the vaso-dilator center, or weakening the vaso-constrictor impulse, would cause dilatation of the blood-vessels and result in hyperæmia?

Thus, we might multiply instances showing that excitation or inhibition of this or that nerve-center or set of nerve-fibers produces a corresponding effect in the part innervated, not only causing changes in the blood-supply, but an increased or diminished activity on the part of the organ involved. It must, however, appear obvious that structural lesions, acting through the mediums of blood-vessels and nerves, will disturb the rhythm or normal movements of an organ, which disturbance or derangement, if extended beyond the physiological limit, will result in disease.

SELF-ADJUSTMENT AND ADAPTATION.

The human body is not only a self-operating machine, but it has a remarkable capacity for self-adjustment, both as to function and structure. It is generally conceded that at least seventy-five per cent. of acute diseases are self-limited; that is, the inherent recuperative powers of the system will overcome them without any assistance.

Not only are functional disorders self-adjusting when the structural disturbances upon which they depend are void of mechanical effect, but, if the resistances is not too great, the inherent tendency to normal very often adjusts abnormal structural conditions even when some degree of mechanical interference exists. More than this. Not unfrequently the self-regulating power will restore, and for a time at least, maintain function or a comparative equilibrium notwithstanding the existence of a structural lesion. In many instances this is due to the system's powers of adaptation to abnormal structural conditions or relations, as exemplified in the surrounding of a foreign body with a fibrous capsule, and in the comparative good health enjoyed by certain hunch-backs. It must be admitted, however, that a structural derangement causes a weakness at some point, and continually predisposes the system to disease.

In chronic conditions structural lesions are ever-present arguments that the cause was not removed in the acute stage, and they readily account for the inability of the system to regain an equilibrium of function.

FUNCTIONAL DISORDERS.

The degree of disturbance is not necessarily dependent upon the extent of the structural derangement. Structural lesions barely detectable often cause the most serious disturbance. In fact, they may be so minute, or so hidden in the deep structures, as to escape detection by palpation or inspection. Hence, that no lesion is discoverable, *does not* necessarily imply that none exists, nor that because one osteopath failed to detect it, another would fail to do so. Herein lies a tendency to conclude that some diseases are not dependent upon structural derangement.

There has long been a belief that there is a class of diseases in which no structural change or lesion exists. Modern research in the medical profession, however, has greatly diminished this class; and, if the word lesion be accepted in the sense in which it is construed osteopathically, we are of the opinion that osteopathic research has practically disproven the entire class of so-called "functional diseases."

Functional disorder is normal to the disturbing influence; and, since function can be affected only through the medium of structure, structural disturbance is implied.

We admit that structural disturbance without mechanical effect is possible, but such a condition is self-regulating, and is a disease only in a restricted sense.

If functional disorder continues after removal of the abusive or exciting influence, mechanical interference is implied.

Curative powers being an inherent property of the organism, and the system being self-regulating, it is not the purpose of osteopathy to do more than correct the condition which *maintains* disease; thus securing the freedom of nerve-and-blood supply.

Although we hold that removal of the cause is the only specific for disease, we admit that benefit often follows the stimulating effect of a treatment given without reference to the correction of a structural lesion. But, it is obvious that the tendency of such a practice endangers the scientific aspect of osteopathy. It should therefore be regarded with caution.

We say, look well for the structural lesion in so-called functional disorders; for, even though not apparent, it is almost certainly present.

STIMULATION AND INHIBITION.

If we should attempt to employ so-called "stimulating or inhibiting treatment" for the cure of diseases, instead of simply correcting the cause, we would make "osteopathic treatment" the distinctive feature of the science, instead of "osteopathic etiology." This would not only be a departure from the true meaning and purpose of osteopathy, but would at once jeopardize its identity.

Direct control of nerves is impracticable, not only because they are usually situated out of reach, but for the principal reason that they are composed of numerous fibers of various functions. For instance: the vagi not only convey afferent and efferent impulses, but contain sensory, secretory, inhibitory, motor and vaso-motor fibers; hence, the difficulty in affecting by manipulation one set of fibers and not another.

The sympathetic nerves have vaso-constrictor and vaso-dilator fibers, secretory, inhibitory and accelerator fibers; hence, by so-called stimulation, would not the afferent impulses affect a dilator as well as a constrictor center, an inhibitory as well as a motor center?

To apply a strong, steady pressure to the lower dorsal region, thereby relieving diarrhea, does not necessarily imply that a structural lesion was not thus corrected. Indeed, physiologists tell us that *stimulation* of the splanchnic nerves lessens peristalsis. Hence, to inhibit them is contra-indicated in diarrhea.

A structural lesion in the splanchnic region might so impair or lessen the inhibitory impulses to the intestines, that an irritating article of food would readily act as an exciting cause of diarrhea, since the vagi, the motor nerves to the intestines, would not be sufficiently opposed by inhibitory impulses through the splanchnic nerves. Correcting this lesion, whether intentionally, or in an attempt to inhibit, would cause stimulation of the inhibitory center and produce the desired result.

So-called inhibition that stopped vomiting in a pregnant individual, does

not necessarily imply that the pressure did not relax contractured ligaments and deep muscles, and thus, in a measure at least, correct a lesion that was not detectable by either palpation or inspection.

There are many cases of pregnancy not accompanied by vomiting, and it is well known that individuals predisposed to stomach trouble are the ones usually subject to vomiting during pregnancy.

Nerve centers are sufficiently distinct for a lesion to affect an inhibitory and not a motor center, a constrictor and not a dilator center.

In other words, structural lesions cause excessive or deficient accelerator or inhibitory impulses. Hence, if the accelerator impulses are excessive, correcting the lesion produces the desired inhibition. If the inhibitory impulses are excessive, correcting the lesion produces the desired acceleration.

Correcting structural lesions is obviously the means by which osteopathy enables Nature to establish an equilibrium between accelerating and inhibiting forces, whereby normal rhythm is restored and health obtained.

SUMMARY.

1. Cells are the active constituents of the organism. Hence, the problem of life and health is the problem of cell-activity.

2. Motion is the primary function of cells—the basic principle of metabolism. Hence, the nature of cells implies rhythmical movements on the part of organs as the chief means for maintaining physiological harmony.

3. The vascular and nervous system contain the vital fluids and forces essential in the performance of physiological rhythm. Hence, they are the mediums through which causes produce the effects known as disease.

4. Function being the expression of structural activity, implies that function can be affected only through structure. Hence, function corresponds to structural condition, and abnormal function implies abnormal structure.

5. Resistance to the self-regulating power of the body-mechanism, implies mal-adjustment in structural relations. Hence, structural lesions are the primary or real causes of disease.

6. Disease is the result of a loss of equilibrium between accelerating and inhibiting forces, produced and maintained by structural disorder.

7. The inherent tendency of the organism to normal, implies that structural disturbance without mechanical interference is self-regulating.

8. If mechanical interference exists, its correction is the only stimulus needed in order for Nature to re-establish an equilibrium of function.

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