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WITH COMPLIMENTS OF THE AUTHOR.

HARMONY AND DISCORD,
HEALTH AND DISEASE, HEALING AND
HINDERING.

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HARMONY AND DISCORD, HEALTH AND DISEASE, HEALING
AND HINDERING.

HARMONIE ET DISCORDE, SANTÉ ET MALADIE, CURATIFS ET ENTRAIRES.

HARMONIE UND MISSKLANG, GESUNDHEIT UND KRANKHEIT, HEILENDE UND HIN-
DERNDE.

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GENTLEMEN :—The life of an individual in ~~this~~ entirety is the result of the total functional activities of every organ in the body.

Life is manifest from the cerebrum to the enamel of the teeth.

All are vital organs, since all are endowed with vitality. Yet certain organs are more immediately essential than others, for "continued adjustment of internal conditions to external conditions," which is Spencer's definition of life.

The life of an individual in relation to all the functions of the body may be compared to an army. The medulla may be likened to the general, who, by a single surrender, may paralyze the entire force; the cerebrum to the staff officers, or minister of war, whose counsels may be either good or bad; the heart and lungs might represent the trusted corps, whose failure would bring destruction to all; the pneumogastric and

sympathetic nerves connecting the heart and lungs with the central organs, to the lines of communication between the corps and the central command, and if broken, favors irregular action that would be disastrous.

The rank and file of private soldiers are the representatives of the many simple functions, such as the special gland and nerve cells, whose extensive destruction brings direct disaster, and *any* destruction is dangerous to all in proportion as such loss yields the balance of advantage to the enemy.

Perfect health is the result of the perfect relation and perfect functional performance of all the organs in the body.

Perfect health can continue only when all the functions of the body are perfectly performed.

Any degree of bodily vigor is consistent with health so long as all the functions are performed in harmonious relation—the powerful athlete and the frail woman may possess equal health, although the forces or quantity (so to speak) of life possessed by each are widely different.

If one could imagine a being endowed at birth with organs and functions so related as to constitute perfect health, and preserving all those fine adjustments till each and every organ had done its share of work, and served out its appointed time; death to such a one would be but the opposite boundary of the total endowment of vitality bestowed at its conception; a mere disunion, just as the ripened golden fruit, which always grew in harmony with nature's law, falls loosened by the dew, ^{or} evening's failing breath.

Organs are so intimately related that derangements of the function of one affect the working of others, and the fine balance which constitutes the basis of health is disturbed, imperceptibly at first, perhaps, but unless corrected always tends further from health and nearer recognized disease, just as two parallel lines made to diverge ever so little, at last are widely separated.

Certain derangement of certain functions (termed vital by those who used to consider vitality as an entity instead of a phenomenon) will, as already suggested, directly cause death—for instance failure of the heart to beat, or an injury to the medulla.

Other derangements react upon the so-called vital functions and thus indirectly cause death; excessive accumulation of urea in the blood.

More remote derangements, or the same in slight degree, may cause great bodily suffering or lingering disease—*e. g.*, chronic diffuse nephritis, chronic gastritis, valvular derangements of the heart, etc. Others may only mark a simple departure from health, as a slight disturbance of the stomach, or of the circulation, producing perhaps merely a sense of discomfort or slight uneasiness, or perhaps only some unconscious impression.

These deranging influences vary only in their force; they are in gradations; the extreme ending in death, and the others tending always to lessen or shorten life.

The failure of one function means extra work for another, or others, and a disturbance of the general harmony of the functions. How severe a derangement a certain cause may produce will depend much upon the comparative strength of the related organs—*e. g.*, suppose twins, of equal health, capable of living to the same age, but one able to accomplish twice as much as the other, the stronger might easily recover from the effects of a poison which would be deadly to the weaker but healthy brother.

In practice we may know that the functions are *not* working in harmony, but we never know they *are* in harmony, even when there is no evidence to our senses of disease.

Certain organs may be performing vicarious functions and be loaded to so near their own limit that a little extra emergency, which ordinarily they would be competent to withstand, determines their failure. "The last straw broke the camel's back."

We never know the weak point in our organic machinery till it breaks or begins to

break. Nature's handiwork should be looked upon with reverence, and we are surely wrong if ever we oppose the laws which govern them. Nature left alone may fail to successfully combat disease, but meddling treatment, that which is opposed to natural laws, will surely hasten the failure.

Nature at times seems prodigal with her supply, but often her provisions are not so abundant as we think. "The sands run out," and nothing turns the hour glass to restore our ^{useful} growth; wasted energy does not come back.

Man is not provided with new organs for those removed by the surgeon's knife; his sun of life is lessened by disease, even though he live out his appointed years.

There is more life lived in a year of health than in the same time spent with the functions clouded by disease.

The stream is as much lessened by baling out of its side as from one end where it falls over the precipice into the sea.

Organs are the vehicles, and nutrition the force of life, digestion the process upon which that force depends, and food is the substance upon which digestion acts.

Man needs a varied supply, to meet which the digestive organs constitute a series of chemical laboratories stationed along the food stream, for the ^{ex-}traction of every needed principle of force.

Dentists stand guard over the beginning of this holy process, this doing of the work by organs prepared for them to do—this silent worship, in nature, of nature's God.

Shall he mar and mangle what was deemed fit to do a certain work, or shall he strive by all his acts to restore the harmony of any disturbed function?

We have not learned the full significance of all that part of digestion which ought to take place in the mouth, and which, in its beginning, is coincident with mastication, insalivation, ^(mastication) the sense of taste, and beginning of deglutition.

Man's life may be sustained for a time by transfusion of blood, by rectal enemas, or by direct introduction of food into the stomach, but something needed is left out of the process of digestion by all these modes. It is not enough that the food reaches the stomach simply well reduced.

Of course, thorough reduction of food is essential, and digestion is active or sluggish, according to whether the reduction was perfect or imperfect.

Insalivation is directly related to mastication. Dalton showed that on the side engaged in the act of mastication, the corresponding parotid gland secreted three times as fast as that of the opposite side, and besides facilitating the reduction of food, it is more and more evident in physiological studies that the thorough mixing of saliva with the food in the mouth is essential, and that the saliva is a true digestive of certain food elements.

Until we can exactly calculate the importance of a normal mixing of saliva with the food upon the process of digestion, and know all the remote effects traceable to it, we must assume that that process is essential, and that the best interests of the body require its perfect performance.

We may also suppose, and the supposition is proved to be true by clinical and personal experience, that the well being of the individual requires that mastication be perfectly performed, not simply for the mere reduction of food, but that insalivation may also be completely accomplished, and to that end both sides of the dental arches ought to be equally competent to perform their functions.

A patient had lost all her right lower molars and all the upper teeth, and mastication was accomplished entirely on the left side, between the molars and a plate worn above. There was an excessive development of the masticatory muscles of that side and a corresponding atrophy of those on the opposite side, the left masseter was more than twice as thick as the right, and this difference added to the sunken condition due to the loss of the right molars, caused the deformity of the face to be very marked.

The patient objected to wearing a lower plate, so to partially correct the deformity, a large plumper was added to the right side of the upper plate.

To supply the function of mastication, natural man was given thirty-two teeth, and so far as any one knows, that was what he needed. That no doubt included provision for not only the regular actual need, but somewhat in excess of that need, in order to supply certain extraordinary conditions incident to a savage life, yet only sufficiently in excess of the ordinary need to insure the health of all when not exercised to their greatest capacity.

It is supposed that civilized man uses his teeth less than the savage; certainly he so prepares his food that he may use them less; but perhaps it would be better to prepare the food with less reference to softness, and to use the teeth more.

It also happens, as a general rule, that the teeth of civilized man are more subject to disease. It is not settled whether dental diseases are due to civilization, or happen merely to be coincident with civilization.

I don't know that the new race of Americans, with their soft teeth, are more civilized than their hardy English and Scotch cousins, or that the peasantry of Normandy, with their notoriously bad teeth, are more highly civilized than the French nobility. Yet if civilization is the whole explanation (which I don't believe) we might turn our argument to prove that such were the case.

Because civilized man uses his teeth less than natural, savage man (it is a pure assumption that savage man is a more natural man than civilized man; the savage may be as degenerate a son as his so-called civilized brother), ought we to logically conclude that he ought to have fewer teeth, just enough, for instance, to preserve their health by actual use?

Some have assumed to answer this question affirmatively, and have extracted teeth.

When the wisdom teeth were selected for extraction, the other teeth were not distributed in their general relations or functions, and the features were not visibly deranged; even after all the second and third molars had been lost, the remaining teeth were undisturbed in their relations or functions, and the person might be able to divide his food sufficiently to enable it to reach the stomach, and if he had time to spare, or the food was made pultaceous by cooking, mastication would be sufficiently performed.

To what point one might go on dropping off teeth from the end of the arches of a race of civilized men and the race not suffer, I do not know.

We can't safely reduce this question to its lowest terms and say that civilized man needs just twenty-four or twenty-eight teeth, and no more, and remove the excess.

It would be more logical to restore their use and proper exercise.

Excepting for the gravest reasons to remove a tooth one must assume that all the biological relations between that tooth and all the surrounding parts are unimportant.

But the size, shape and relations of the jaws to each other have to do with the number of teeth that they contain and with the relation of the muscular attachment and nervous distribution. The position, form and size of glands are related to such forms and positions; so also is the size and shape of the jaws related to the general architecture of the face.

One must assume that the (slight, perhaps,) changed manifestations of action and reaction which would be exerted upon the entire machinery of the face are unimportant, and that the total derangement would not be disadvantageous to the whole body.

It is to assume to know the means and ends of creation, and he no less surely sets himself up in the Creator's business, to become an unsuccessful rival to the Almighty.

Civilized man may be thrown upon the same resources as savages.

In wars, voyages of discovery, in famines and poverty incident to great public calamities, the hardships of civilized man may exceed those of savage man.

We see that although certain conditions of civilization would seem to render the possession of thirty-two teeth unnecessary, many contingencies are likely to arise (and possibly to any individual) when the functions of the teeth up to their full limit may need to be called into action.

We see nature's abundance was limited in the supply of teeth to man, for while it is undoubtedly in excess of his ordinary needs, possibly to provide for such a misfortune as the accidental loss of a tooth, she was not sufficiently extravagant in the supply to provide against wholesale destruction of grinding surfaces, either by extraction or by excision of teeth; neither was she so extravagant as to supply a sufficient number of teeth to provide against widespread disease of these organs; nor did she provide for a third dentition after entire loss.

Nature may do better at times if left to herself.

I have not seen the teeth all lost before the age of twenty without man's aid, but by his hand, guided by his feeble brain, I have often seen the march of disease exceeded, and the jaws stripped bare of every tooth that had dared to erupt, and all before the age of sixteen years; but that does not prove that nature is prolific in tooth supply.

In fact, prolific or extravagant supply of organs is everywhere denied, under the law of adaptation according to need. If an organ was evolved to meet a need, it was by such gradations that time entered in a proportion, that years were cyphers and ages only units of measurements, and evolving thus, there was permitted all those accessory developments of structure and functions in such relations that the equilibrium of the entire organism was maintained during the entire process of such an evolution.

Where supply at first seems most prolific, and in excess of need in the provision for reproduction of the individuals of a species, perhaps only one out of ten thousand embryos of certain fishes develops to maturity.

Why this excess of embryos? To meet the necessity of the great destruction to which the young of the species are exposed; a lessened number of embryos would mean extermination of the species after a time.

There is always a check in nature; the fight for existence is a close one, and slight advantages determine the result. The fittest survive.

No one knows that the teeth of man are becoming rudimentary, that they are undergoing suppression, under the law of natural selection. Any slight variations we may observe from the common type *may* be multiplied in future ages into a regular production, but the *chances* always are that these changes will be transitory, only enduring, at the most, for a few generations.

They are merely as the ripples on the surface of the ever-varying but unchanging ocean.

We find many abnormalities of teeth, both in man and in the lower animal, but there are few as compared with the number which sufficiently approach the type to be considered true.

The wisdom tooth is at times suppressed, at others it is the lateral incisor, or it may be any other tooth; and on the other hand, we have supernumerary teeth appearing contemporaneously with either the first or second dentition, and occasionally a few teeth develop after all have been lost.

It is doubtful if we have any good reason to consider the teeth of man as becoming rudimentary, *but if they are rudimentary, they are still needed as rudiments to preserve the present functional adjustments of the organism*, just as much as if they were fulfilling the highest functions of teeth ~~and bound to a different organism by a stronger band of relationship.~~

Rudimentary organs may point to lessened need, but to forcibly remove them, thinking them useless, would be to show one's ignorance of the relation of organs and of the forces which govern their development and final suppression. It would be to

derange the forces which are alone capable, in time (reckoned, perhaps, by ages), to preserve the remaining organs for the event of entire suppression.

The importance of the loss of a tooth from the mastication point of view is not simply in proportion to the amount of grinding surface which it removes, unless this loss is at the end of the arch, as already instanced by loss of the wisdom tooth, but *depends upon the total derangement which will be caused to the remaining teeth.*

For instance, loss of first molars removes a large share of grinding surface and causes much immediate disturbance of the function of mastication; but all that is of slight importance compared with the effects produced upon the other teeth, such as the robbing of their support and loss of function due to their tipping out of relation.

In many mouths the arrangement of the teeth is very imperfect; an extraction may ruin an articulation on the only side capable of perfect mastication.

In another mouth the relation of surfaces may be defective forward of the second molars, and mastication is principally performed by the second and third. It is plain that the third molars in such a case are of unusual importance; but don't imagine that the first may as well be lost as not, since it is not employed in mastication; for its support is needed to preserve the relation of the second and third, and its loss would be disastrous by allowing those teeth to tip out of relation. Better to save the roots, even of the first molar, in such a case; for that will arrest the tipping of the others earlier than otherwise, and the root will protect the gums.

In some the inner cusps of the bicuspid are short, and these teeth seem capable of little work, yet they support other teeth and preserve the contour of the arches in relation to the typical plan of the features; whereas, their loss might cause the hooking inward of the lower incisors, or ugly spaces between upper incisors.

I am forced to confess the belief that an enormous proportion of all the derangements of the articulation of teeth have been directly or indirectly caused by bad dentistry—bad because opposed to the natural laws and forces governing the arrangement of the teeth.

There is a tendency among dentists to classify cases and to formularize the principles of practice into a series of set rules, and when a certain case presents, adapt the classification and rule they are accustomed to apply almost mechanically, without subjecting themselves to the trouble of a little special reasoning to exactly adapt the treatment to the case. The patient suffers from this plan in proportion as his case happens to differ in detail from the classified type.

Authors must classify cases and treat of them in groups; the principles and laws of treatment may thus be communicated to all; but in practice the dentist deals with individuals, and not with groups; therefore he must not only consider the general laws in their general application, but he must also study and determine the fine variations of his case, and adapt the treatment accordingly, and he will be successful in proportion to the skill and judgment exercised in such adaptations.

Some misunderstood my recent paper, and some misunderstand this, and I shall be called an extremist; and the reason was and will be that both papers, dealing mostly in principles, could not go down into all the details of special causes without confusing the idea of the reader and perhaps obscuring the main principles.

Now, supposing a line of principles to have been established, one's practice should have a general correspondence to that line, but necessarily varies from the line according to conditions and circumstances not subject to the general laws.

If these principles, then, might be represented by a straight line, their common-sense application to special cases by an intelligent dentist would be shown by a wavy line, always crossing and recrossing, but never varying far from the straight line.

To plead for eclecticism because the principal line does not follow all the little

undulations of the special line, would be as absurd and unnecessary as would be the need of a direct statement that every dentist ought to possess common sense.

While we must vary our practice to meet the minute needs of a case, we are liable to overstep our rightful limit of freedom, unless we so broaden our views as to include the higher laws which govern and which establish the main lines, along which we must follow.

If a man's knowledge could be as broad as the universe and the laws that govern it, then he might cease making mistakes.

The discussion was to have been opened by Dr. W. H. Atkinson, of New York.

The PRESIDENT called upon Dr. ATKINSON, who said: "In proof-reading, when we think we cannot improve a word, after marking it for correction, we write 'Stet.' I say, 'Let it stand.'"





