

Building the Teeth by Herbert Shelton

Building the Teeth

That man's teeth are naturally as sound and durable as those of the lower animals was shown in Vol. I. Geologists and paleontologists often unearth the skulls of peoples long dead, the teeth of which show no signs of decay and the enamel on which is often almost double the thickness and much harder than the enamel on our teeth.

Today most of the civilized portions of the race are a race of dental cripples. We are face to face with the fact that our teeth begin to decay in childhood. Indeed they sometimes have cavities in them when they erupt.

In 1913 Dr. A. Freedman Foot examined 1,694 children in six clinics and found eleven of these with normal teeth. In his report to the Second District Dental Society of New York, Dr. Foot said: "The six year molars of nearly every child was broken down wholly or in part. In many instances the molars were decayed when they came through the gums. So extensive and far advanced were the defects that corrective treatment, even if it were applied would have been of little value."

Dr. Louis Goldstein, New York City, declares: "After examining the teeth of not less than 400 school children in my home neighborhood here in Bronx, I have yet to see a perfect set of six-year molars (first four permanent teeth to appear in childhood). These teeth in nearly every instance were entirely decayed. I have never observed a perfect set of teeth in any American child and have but one adult patient showing extremely good teeth. She is a young woman."

The six year molars are the first of the permanent teeth to erupt. They should last throughout the life of the individual. Why should they decay in childhood? Why should they have cavities in them when they erupt? It is evident that such teeth cannot be saved by brushing the teeth. They must be saved before they ever come through the gums or they will not be saved. Something more fundamental than "uncleanliness" of the surface of the teeth and mouth is concerned with the production of tooth-decay. Until this is recognized by the parents of the world, there is no hope of ever saving the teeth of our children.

Hugh W. McMillan, D.D.S., M.D., of Cincinnati, says: "To a careful observer of dental conditions at the present time in clinic and private practice, it is very evident the ravages of dental caries and diseases of the gums are daily increasing, in spite of the increasing number of dentists, in spite of the multiplicity of patented and personally-designated tooth brushes, in spite of proprietary pyorrhoea cures and gum massaging pastes, in spite of acid, alkaline, neutral, mucin-dissolving and film

destroying tooth pastes and mouth-washes and in spite of the type of periodontologist who aims to prevent by either applying or removing something from the tooth surface in the same manner that some unintelligent physician might expect to cure by external applications a skin disease of general origin.

"Treated by a combination of all these methods dental decay and gum diseases progressively continue, causing pain, discomfort, nervous disorders, impaired digestion and local infection, until after a losing fight the bewildered patient rests edentulous and free from organs which under the present regime may be considered physiologically superfluous."

Dr. H. J. Morris, president of the Yorkshire Branch of the British Medical Association says: "The cry that clean teeth do not decay is really absurd, because under the popular method of feeding, the teeth cannot be kept clean. Surely we have seen enough by this time to have lost our faith in the tooth brush, and it is time the people lost theirs too. The old belief should be modified by a new one.

"As a matter of fact," Dr. McMillan says: "the tooth brush does not get in between the teeth or down in the occlusal fissures or around fillings or under the gingival margins. The actual places where decay primarily occurs are not touched by the brush. As ordinarily used, about all the brush accomplishes is to polish the already self-cleansing surfaces.

"Is it sufficient to tell a patient that a clean tooth never decays, when it is often impossible to clean it with sealers? Is it right to tell a child to brush his teeth so that they will not decay, when often patients are seen who brush their teeth several times each day and still caries are rampant?"

I have seen children whose teeth were all but wholly destroyed despite the regular and frequent use of the tooth brush. The enamel was melted off their teeth down to the gum line, the teeth were "eaten" away until they were not larger than needles; along the gums they were black and often covered with tartar. It is foolish for dentists and the manufacturers of tooth brushes and toothpastes to tell these children and their parents that "a clean tooth never decays."

Parents are advised to have the dentists frequently examine the teeth of their children and repair all defective first teeth, because the jaws do not develop properly if the temporary teeth are lost and the second set of teeth will be impaired by this loss. This is a case of getting the cart before the horse. The loss of teeth does not cause the faulty development of the jaws, nor the injury to the permanent teeth. The permanent teeth suffer, the jaws fail to develop properly and the first teeth are lost due to the same common cause.

NOT CAUSES OF DECAY Sugar and fruit acids do not injure the enamel of normal teeth. Sound teeth have been immersed in a sugar solution and in fruit acids for months without suffering any erosion. Dr. E. Howard Turison and others have proved this.

Sugar can hurt the teeth only by entering the stomach and blood and perverting metabolism. Free sugar (commercial sugar) possesses a strong affinity for calcium. When eaten in considerable quantities it leaches the tissues, including the teeth, of their calcium. Dr. Howe says, "only when general derangement follows sugar feeding does caries occur." Starches, sugars, including candies and syrups, must be eliminated from the diet in treating pyorrhoea.

Lactic acid does not injure the enamel of the teeth. No experiments have been able to show that bacteria of any type, when cultured on the teeth, are responsible for dental caries. Bacteria, even if they enter into the production of dental decay, play a very subordinate part and, in conditions which seem to be most favorable to their activity and growth, they are powerless to produce dental decay so long as the resistance of the body is normal.

Tooth decay is attributed to the action of bacteria and their acids upon the teeth. In recounting his experiments on monkeys in which dental caries was produced by a deficient diet and, incidentally, referring to the lactic acid theory of tooth decay, Dr. Howe says: "Before we examine the effects of vitamin-C deficiencies upon the teeth of monkeys, let me remind you that all of our efforts to affect these teeth by fermentation in the mouth for long periods of time by the feeding and injection of microorganisms associated with caries have been unavailing, so long as the diet was normal."

Experiments by Drs. Howe and Hatch (1917) in America, and by Sir James McIntosh, Warwick James and Lazarus-Barlow, working together in England, in trying to produce dental caries by using acid forming bacteria all resulted negatively. Dr. Howe says that "so long as the diet is normal it has been found impossible to cause caries or pyorrhoea by maintaining fermentation in the mouth or by feeding or injecting the bacteria believed to be most actively associated with dental caries."

There is a deeper cause for tooth decay than the germs that get onto the surfaces of our teeth. That cause exerts its baneful influence upon the growth and development of the teeth. That cause reaches back into the prenatal life of the child when the tissues of the teeth are being formed and developed.

If these things are not so, why then are so many teeth plainly defective when they erupt. They are small, distorted, overlapped, notched, have cavities in them and present other evidences of faulty structure and of lack of resistance to the forces of

decay. It is so common to see the six-year molars, the first permanent teeth to erupt, come through with cavities in them.

Something more fundamental than a tooth brush and a biannual dental examination is required to prevent such a condition as this. Something more than these things are essential to the preservation of such teeth.

The ocean of dental decay is so large and its causes such that it can never be coped with by cleaning and filling the teeth. No amount of scrubbing and polishing can preserve them if nutrition is inadequate. Only a radical program will avail us here.

Cleaning the teeth of tartar, which is intended to save the gums and not the teeth, avails little unless a change in food and water is made. The calcific (lime salts) and food debris deposits (tartar) collecting about the necks of teeth come from the saliva and excess lime in free use of lime water. It often collects rapidly.

TOOTH DEVELOPMENT It is well to bear in mind that every tooth a man will ever have (except the false ones) is already formed or being formed in his jaws at birth. The teeth actually begin to be formed before any of their supporting structures in the bony alveolar process.

The anlage or germ appears as the dental ridge developing from the cells of the ectoderm, as early as the seventh week of fetal life. Out of this ridge the tooth-buds of the temporary teeth with the enamel organ's begin to be differentiated about the eighth week. These structures, invade the underlying mesoderm and together they form the "dental papilla" which becomes distinguishable during the ninth or tenth week.

The tooth-buds of all the deciduous teeth are definitely formed and the enamel organs of the permanent teeth have appeared by the fifteenth week. At about the twentieth week calcification sets in in the tip of the incisors to be followed by calcification in the canines and premolars in the twenty-fourth week.

The first permanent molars, in their origin and development, follow very closely the development of the temporary teeth. At about the fifteenth week their enamel organs first appear and this is followed two weeks later by the formation of their dental bulbs. The dental follicles of these teeth are complete and their calcification has begun by the ninth month. All of the other permanent teeth have also been laid down by this time and are calcified during early childhood.

Let us briefly review this: At birth all of the temporary teeth are definitely formed and calcification is in process; the six year molars are formed and calcification of their

crowns is under way; all of the other permanent teeth have been laid down and await calcification during early childhood.

It is before birth, when these teeth are forming, that we must begin to save the teeth of child and adult. For, not only is it here that those defects are produced which are visible in so many teeth when they erupt, but here also are many of the defects initiated which are to appear later. A soft pre-tooth structure laid down in the jaws of the embryo, due to nutritional perversion of the mother, predisposes the teeth to cavities and decay. Finally calcification, due to nutritional perversions and deficiencies, injures both the temporary and the permanent teeth.

NUTRITION A faulty diet and nutritional derangements after birth easily results in faulty tooth structure, both in the temporary and permanent teeth. The prenatal months and the pre-school years are, indeed, as they have been aptly termed, the golden age for the prevention of tooth decay. If no thought is ever given to the requirements of children's teeth until after they erupt, the chances are that, on our modern diet, the child's teeth will be defective and short lived.

Upon the mother falls the duty of feeding the teeth during the prenatal months and during the nursing months after birth. The duty and the responsibility are hers. Her duty is not merely to her child but to herself, as well. For, if she does not supply the embryo and perhaps even the suckling, with the necessary elements in her food, nature will manage to take some of these out of her own tissues. Her own teeth will suffer, and perhaps, also her blood and other tissues, due to nature's habit of safeguarding the child at the mother's expense.

Dr. Howe says that: "The deficiencies which manifest themselves in the dental apparatus of the child are generally, in part at least, results of deficiencies in the diet of the mother before the child is born and wrong feeding of the infant. It is more and more the duty of our profession to take care of the dental condition of the expectant mother. The diet which will protect the teeth against the heavy demands of this period is the very diet to supply materials for the bones and teeth of the foetus."

Mothers tend to lose their teeth during pregnancy and lactation. This is not true of animals and savages and is so in civilized mothers because their diet does not meet the demand for extra calcium during this period.

It is an old proverb among mothers, "with every child a tooth." To this may be added, "for every child several cavities." A British investigator, Dr. Ballantyne, in the study of a hundred cases in the Edinburgh Royal Maternity Clinic, found that ninety-eight per cent of the pregnant women suffered with "dental caries or infection." Ninety-three per cent of this number had had one or more extractions. More than half (53%) of these patients were under twenty-five years of age. Almost

as high percentages of carious teeth have been noted in pregnant women in some of our American clinics.

On a deficient diet (experimental), growing animals show such effects as the following--dental caries, cranial caries, mandible caries, caries of other bones, distortion and malnutrition of bones--such as shortened and small ribs, smallness and deformity of the cranium, chest, pelvis, etc.--rickets, distorted and malposed teeth, crooked nose, etc. Caries is the term for decay or ulcerous inflammation of bone.

Dr. Howe placed animals on a scurvy producing diet and produced "retarded growth, warping of the body structure, lowered vitality, susceptibility to colds and more serious forms of illness." If the diet is bad enough the animals die in four weeks. If not greatly deficient "death does not come immediately or completely, as with entire deprivation (of vitamin C), but comes creeping on slowly, insiduously and progressively, until it involves all the bony tissues, including the teeth. Even the enamel, which is the hardest and perhaps the most resistant tissue in the body, is affected."

"The particular form of starvation which is scurvy dissolves the soft or organic parts of the bones and teeth. In bones there is an organic matrix or frame-work, and the mineral salts, which give stiffness and hardness, are held in this organic material. Even the enamel has such a framework, and evidence which lies before me as I write indicates that there is more circulation in the enamel than we have supposed. When the body is deprived of enough vitamin C for a long time something happens to the matrix, perhaps in tiny spots here and there through the body, and if the deprivation is sufficient, the matrix will break down."--(Howe)

Howe further says: "We have seen that, under the influence of a vitamin C deficiency which has not been sufficiently prolonged to cause recognizable signs of scurvy, the pulp of the tooth in a guinea-pig will undergo changes that are destructive for it and for the dentin. It will shrink forcibly enough to tear the odontoblastic processes out of the dental tubuli and, in the section (a picture of a set of teeth is here shown), something appearing like broken processes may be seen on the outer margin of the pulp. This tearing out of the processes probably renders it impossible for the odontoblasts to continue the functions which may be essential to the metabolism of the dentin, and soon thereafter the dentin begins to liquefy and may be extensively or completely destroyed. If similar changes occur in human teeth, is it not probable that dentin in which the functions of the odontoblasts have not been torn away, would offer less resistance to the agents of decay than the same dentin would when in good health? Our experiments show that a complete vitamin C deficiency will visibly affect the odontoblasts in about five to seven days.

"We have seen that very soon after the feeding of orange juice is begun, the pulp, though incapable of returning to its former size or form, resumes some of its functions and initiates the development of secondary dentin, which might be called dental scar tissue."

Animals fed on a deficient diet until they are ready to die, and have sustained great injury to their teeth, improve upon being given orange juice. Dr. Howe says that within twenty-four hours after the first feeding of orange juice, the pulp of the teeth begins to resume its dentin-building function. I have seen great improvement in the condition of the teeth of adults follow improved diet. Howe tells us that "when the nutritional balance is restored, the destructive process from within can be stopped and, if it has not gone too far, may be repaired. It is quite possible that you may do that with these other teeth if you will prescribe liberal quantities of fresh whole milk, unpasteurized, orange juice and green vegetables. Keep the protein in the diet low. Excess protein in the diet of experimental animals is always a disturbing factor."

Howe and others have shown that animals fed on the conventional American diet of refined cereals, pasteurized milk or cream, white sugar, meat and eggs, bread, coffee and sweets, with a deficiency of minerals and vitamins, develop rickets, scurvy, etc., and decay of the teeth. If the diet is very bad, the animals develop not only dental caries, but caries of the cranium, ribs, spine, and of the bones of the limbs.

Dr. E. A. Crostic, New York City, observes: "No one in New York City is eating the proper food these days. Foreigners who come here with a history of natural foods, behind them possess solid tissues.

"Thirty years ago when the occasion arose people could sit in a dentist's chair and have several teeth extracted without wincing. Today, so lacking in nerves, energy and vitality are our women, that almost any of them after the ordeal of one or two extractions is on the verge of collapse."

Faulty food weakens the nerves as well as the teeth and lowers resistance to pain and shock. I am sure that if people would have their teeth pulled without the use of anaesthetics, there would be far less after-suffering and no deaths from anaesthesia.

Dr. Howe was able to produce bone destruction in various parts of the body by faulty diet. He was also able to demonstrate bone regeneration following an improvement in diet. Some of the destructive changes were so like osteomalacia that they could not differentiate between the "two" conditions. The conditions are probably identical. By the same faulty diet he was able to produce dental caries;

and by a change of diet he produced a degree of dental regeneration.

Each tooth is a highly specialized piece, of bone, a part of the bony system of the body, and receives its nourishment from the blood, just as do the other bones of the body. The teeth are subject to the same laws and nutritional requirements as the rest of man's bones and are affected for good or ill by whatever affects the nutrition of the body as a whole.

The teeth are leached of their salts from the inside until there is only a shell left. The decay begins on the inside. The teeth may be practically destroyed from within. Cavities form inside, then the enamel breaks through. Scrubbing the surface of the teeth cannot build sound teeth. The healthy human mouth is self-cleansing and bacteria cannot thrive therein.

Howe fed growing animals on deficient and adequate diets alternately and produced stripes of hard structure and soft structure in the teeth representing the periods of feeding. He placed guinea-pigs on a deficient diet and says: "We found that soon the teeth became decalcified, lost their hardness, could be easily penetrated by a sharp instrument, or a pin and that they were so soft they easily bend. Distinct cavities formed in some and the dentin was badly disintegrated.

"We found the alveolar process, or semi-bony structure that holds the teeth firmly in place had been gradually absorbed, so the teeth became loose and could be easily pulled out with thumb and finger whereas ordinarily they are set in very tightly, as are healthy human teeth.

"Inflammatory and degenerative changes occurred resembling pyorrhoea. In the experiments where we injected micro-organisms, into the gums of guinea pigs, no such results occurred, showing that pyorrhoea is a result rather than a cause.

"Irregularities of the teeth occurred, in one case the teeth crossed each other, making a letter X. Putting this animal back on a normal diet recalcified these teeth, set them hard in their sockets and so fixed them permanently in this abnormal position.

"We examined the jaws of some of these animals after they had died. The jaws showed that while the guinea pigs had been on a vitamin deficient diet, the bony structure of the jaw had been mined of its calcium and when the normal diet was restored, areas of calcium had been replaced, showing very definitely that the body calls on the bones for calcium when it is needed in the blood, and that the blood gives calcium back when there is an abundance of this element."

Zilva and Wells fed guinea pigs on a scorbutic diet and noted the following

changes in their teeth--pronounced cellular disorganization, with disappearance of nuclei and of interstitial cement substances. The disintegrating process involved the nerves, cells, bloodvessels and odontoblasts, their places being taken by a new firm, fibrous structure devoid of cells, nuclei, or regular arrangement of constructed parts. Similar pathological changes have been observed to occur in the various organs of the body.

Let us understand, once and for all, that decay of teeth is a result of a disturbance of calcium metabolism, from whatever cause. It may be and often is due to a faulty diet; and may be and often is due to many other factors and influences that pervert metabolism. I have seen the rapid breaking down of the teeth in cases of marked chronic digestive troubles. Hyperacidity of the stomach is a frequent cause of crumbling of the teeth. Animal experimenters point out that those animals that develop caries, also develop acute gastrointestinal disturbances, diarrhea with mucus and blood in their stools. The best diet that can be fed will fail to nourish the body if it is not digested. It follows, logically, that whatever deranges digestion and perverts metabolism may be responsible for tooth decay.

Dr. C. R. Kelley, New York City, observes, "Periods of disease in children marked for general nutritional disturbances in which tooth nourishment is for a time completely shut off, leave their traces like sign-posts on developing teeth."

Defective teeth are always present in rickets. This is true in children, in dogs, in pigs and in other animals. The pig is most susceptible to rickets of all domesticated animals. At the Rowett Institute, in England, it was not found possible to produce any symptoms of rickets in any animal, under any environment, favorable or unfavorable, on a diet which contains a sufficient amount of alkaline salts. Mineral deficiency brings about rickets, and injures the teeth.

Artificial infant feeding tends to produce decay of the teeth. Children in England and Scotland show about 85% decayed teeth. American children who are breast-fed to six months or more show 42.6%, decayed teeth; if they are nursed under six months they show 42.9% decayed teeth. Children fed on sweetened condensed milk show nearly 73%, decayed teeth. The vital necessity of nursing your child is thus made manifest. But, it is also necessary that you feed yourself properly.

In certain tribes who chip their teeth off and point them in their effort to add to their beauty, so long as their broken teeth are well-nourished, they do not decay. An animal may break a tooth in a fight or otherwise, but it does not decay.

There is only one reason why civilized children cannot have as good teeth as savage children--the refusal of pregnant and nursing mothers to eat proper foods and take adequate care of themselves and their failure to properly feed their

children up to the sixth year of their lives.

Fluorine starvation may often be responsible for a thinning of the enamel of the teeth. But there is no excuse for fluorine starvation. Nature certainly supplies us with abundance of this in natural foods.

Mrs. Mellanby (of England) declares, "the more cereals that are eaten, other things being equal, the worse formed are the teeth." I think this applies to all cereals and to all cereal foods, but it particularly applies to all denatured cereals. The present diet of civilized peoples is largely acid-forming, and the excess of the acid radicals in our diet makes a great demand on the alkaline bases of our bodies. White flour has been robbed of most of its alkaline salts and is much more acid-forming than whole-wheat flour. But even whole-wheat is an acid-ash food.

The mineral salts of white bread have a higher acidity than that of other cereals. It is, no doubt, for this reason that in countries that subsist largely on white flour, tooth decay is more prevalent than where other cereals (also denatured) are used.

Investigations have revealed that those races whose diets include no cereals have teeth and mouths practically free of any kind of disease, while those races whose staple diets are cereals and meat with relatively small amounts of fruits and vegetables have jaws and teeth like those so common in America. Wheat is the most damaging of all the cereals, regarded from the point of view of its acidity. Little meat and cereals and an abundance of fruits and vegetables produce teeth like those found in Polish and Irish peasantry and those of the vegetarian races of the Orient.

Chalky decomposition of the enamel of the teeth is the result of calcium and phosphorus deficiency over a period of years. It is not always possible to arrest the decomposition or to improve the teeth. Indeed I recall having seen but one case where marked improvement followed a revolution of the diet. If this condition is to be prevented in children the mother must have ample mineral-bearing food during pregnancy and lactation.

If, in the quotations from Dr. Howe, we substitute the words fresh fruits and green raw vegetables, for the term vitamin C, we have a practical working basis upon which the mother may feed herself and her child. All denatured foods rob the body of minerals. All excess of acid foods rob the body of calcium and other bases. Fruits, green vegetables and nuts are best for the teeth.

EXERCISING THE TEETH Soft diets, which require no work of the teeth and jaws in chewing, aid in producing dental decay. No tooth can have adequate nutrition unless it is used. Mush-eating does not give the teeth proper exercise. Raw foods

are best. A tough, fibrous diet not only gives the teeth and jaws needed exercise, but also cleans the teeth. The conventional, unnatural and highly refined, cooked diet leaves the mouth and teeth dirty.

IRREGULARITIES AND MALPOSITIONS By the time a child is five or five and a half years old its baby teeth should be well spread apart in front to make room for the permanent teeth, which will soon begin to erupt. If the child's diet and care have been proper, so that his or her development has been normal, this will be so. But how often do we see it otherwise? The vault of the mouth is so often high rather than broad and flat, as it should be. There is not room in the jaws for the permanent teeth. As a result these are crowded or overlapped, malposed and irregular. They must also be defective, for the same developmental failure which resulted in a faulty dental arch, also produces defective teeth.

Dr. Howe says that: "Under favorable conditions, the child develops proper cranial and facial proportions and a broad dental arch, and at the proper age the deciduous arch voluntarily widens to form the anterior portion of the permanent dental arch" * * * "under unfavorable conditions, facial development in the child may be retarded so that when it is time for the permanent teeth to erupt the arch may not be wide enough to accommodate them and they will be malposed. Such a physical deficiency may arise from any of many causes acting either singly or together, such as poor heredity, lack of sunlight, illness, a deficient diet, and perhaps others."

Prof. E. Mellanby has shown that the structure and arrangement in the jaws of teeth of animals depend largely upon their nutrition during the period of development, so that it is now possible to produce almost any degree of imperfection of the teeth by supervising the diet of puppies.

BASIS OF SUCCESS I have watched the failure of the efforts to stay the decay of teeth by the use of various diets and various articles of food. A quart of calcium-rich milk a day does not prevent tooth decay. Feeding phosphorus-rich foods has not prevented tooth decay. Giving vitamins C and B has failed to save the teeth. The giving of vitamin pills, calcium and phosphorus tablets, etc., has failed, equally with the diets. Giving orange juice also failed. Feeding cod liver oil does not save the teeth. The result is that many dentists are convinced that no diet can save the teeth. Yet the fact stands out like a sore thumb that people on certain diets do maintain good teeth while those on other diets have poor teeth. What is the answer? Dietary adequacy and not specific dosage with one or two or three nutritive factors. The Law of the Minimum must be satisfied.

Good teeth depend upon good health and not vice versa as the tooth-extracting fad proclaims. No cause of impaired health, however insignificant it may seem to be, should be neglected if the teeth are to be preserved. There seems to me to be no

way to preserve the teeth by any plan that falls short of a complete system of health building. No one-idea plan can succeed. Soundness of the teeth will be preserved by the same mode of living that preserves soundness in all the tissues and structures of the body. We must learn to think in terms of health-building. We must learn to think in terms of health of the whole organism and cease thinking in terms of local health.

The health conditions found in the mouth are local indices of the condition of the tissues throughout the body. There is no such thing as a local tooth disease. The condition that leads to decay is always systemic. More than 75% of children presenting extensive dental caries, also have other serious troubles. Instead of the decay of the teeth being the cause of the systemic derangement and so-called local troubles elsewhere in the body, the systemic derangement is the cause of the tooth decay and other mis-construed local troubles.

So long as we view the teeth as isolated isonomies and forget their relationships with other parts of the body, we cannot hope to find the cause of tooth decay and will continue to fail in our efforts to preserve the teeth. Disease of the teeth is merely part of the disease of the body. Health of the teeth is part of the health of the body. The unsoundness dentists find in teeth which they indict as cause of disease, is merely part of the general pathology of a diseased body.

Searching for a unitary cause of tooth-decay is folly. The basis of good health is, at the same time, the basis of sound structure and normal function in all parts of the body. Teeth, like the eyes, heart, bones of the spine, etc., depend upon the whole of the elemental factors of life.

Any factor, physical, nutritional, emotional, etc., that perverts or impairs nutrition will cause the teeth to decay. Poor health, impaired nutrition, perverted metabolism, however produced, affect all the structures and functions of the body in varying degrees and any effort to preserve or restore integrity that ignores the cause of general impairment must fail.

Health is the basis of sound teeth. There can be no completely sound teeth in diseased bodies. No decay of the teeth can occur in a perfectly healthy body that is maintained in this condition by first class habits. Anything that is essential to good health is essential to good teeth. As the teeth are integral parts of the body their health depends upon the general integrity.

HEALING OF TEETH Hygienists and others have long held that teeth will heal. Until recently dentists have denied this. There is no longer room to doubt this.

The teeth are bones. Bones do heal and regenerate under favorable conditions.

Even the enamel of the teeth, it seems, is able to repair itself, as I have been able to demonstrate on a broken tooth of my own. Self-restoration of teeth with cavities in them have been reported by dentists within the last few years.

Limits must be recognized to the self-restorative powers of the teeth and regenerative conditions established as early as possible. Success cannot be expected, even then, in all cases.

Repair of the teeth depends, not alone upon a diet of fruits and vegetables, but upon a general improvement in health. Every factor that improves nutrition--sunshine, exercise, rest, etc.--will aid in repair.