

**Facts for the people, relating to the teeth : showing their influence upon the health, speech and looks; with directions for their care and preservation / by T. D. Thompson.**

**Contributors**

Thompson, T. D.  
University of Toronto

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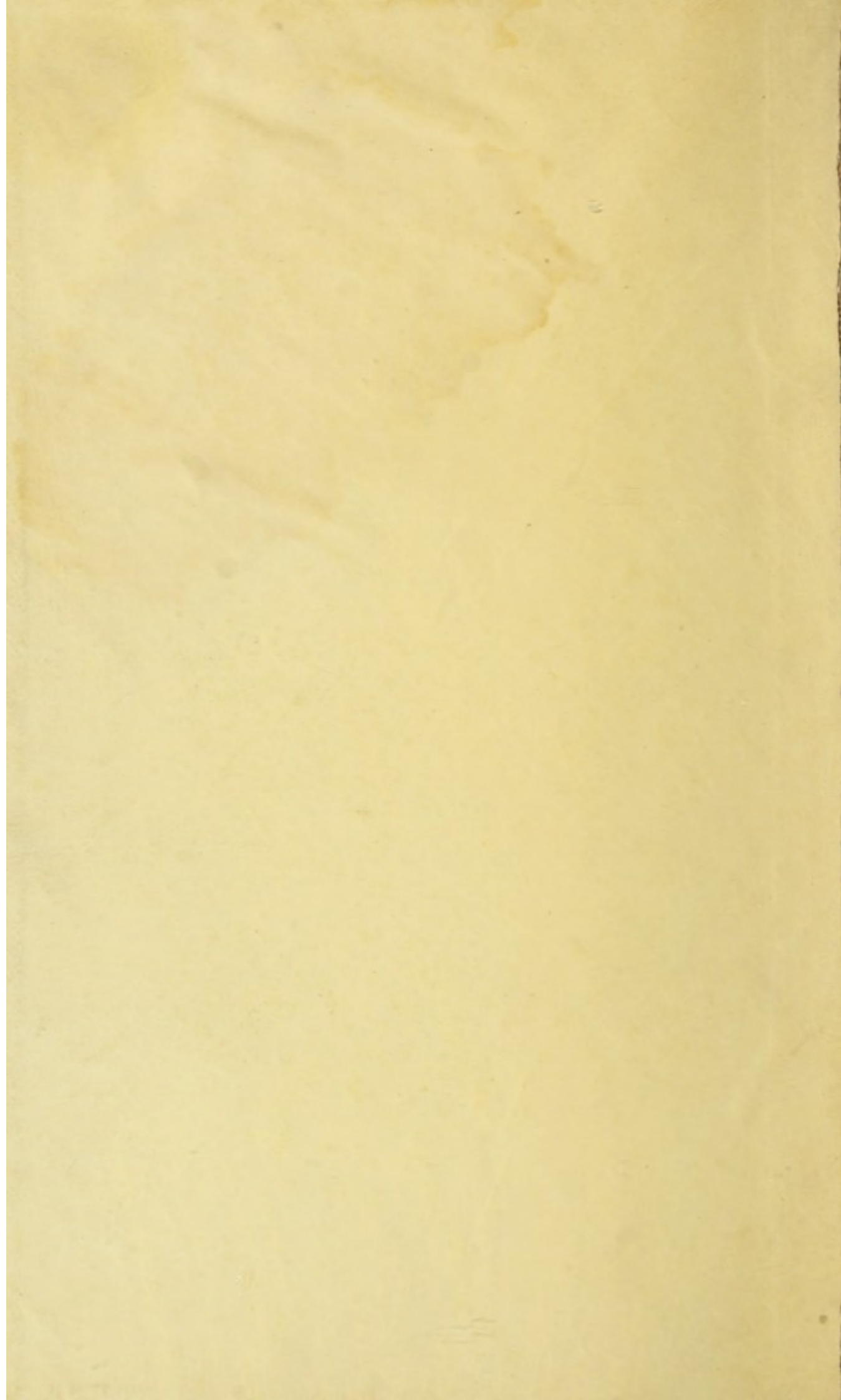
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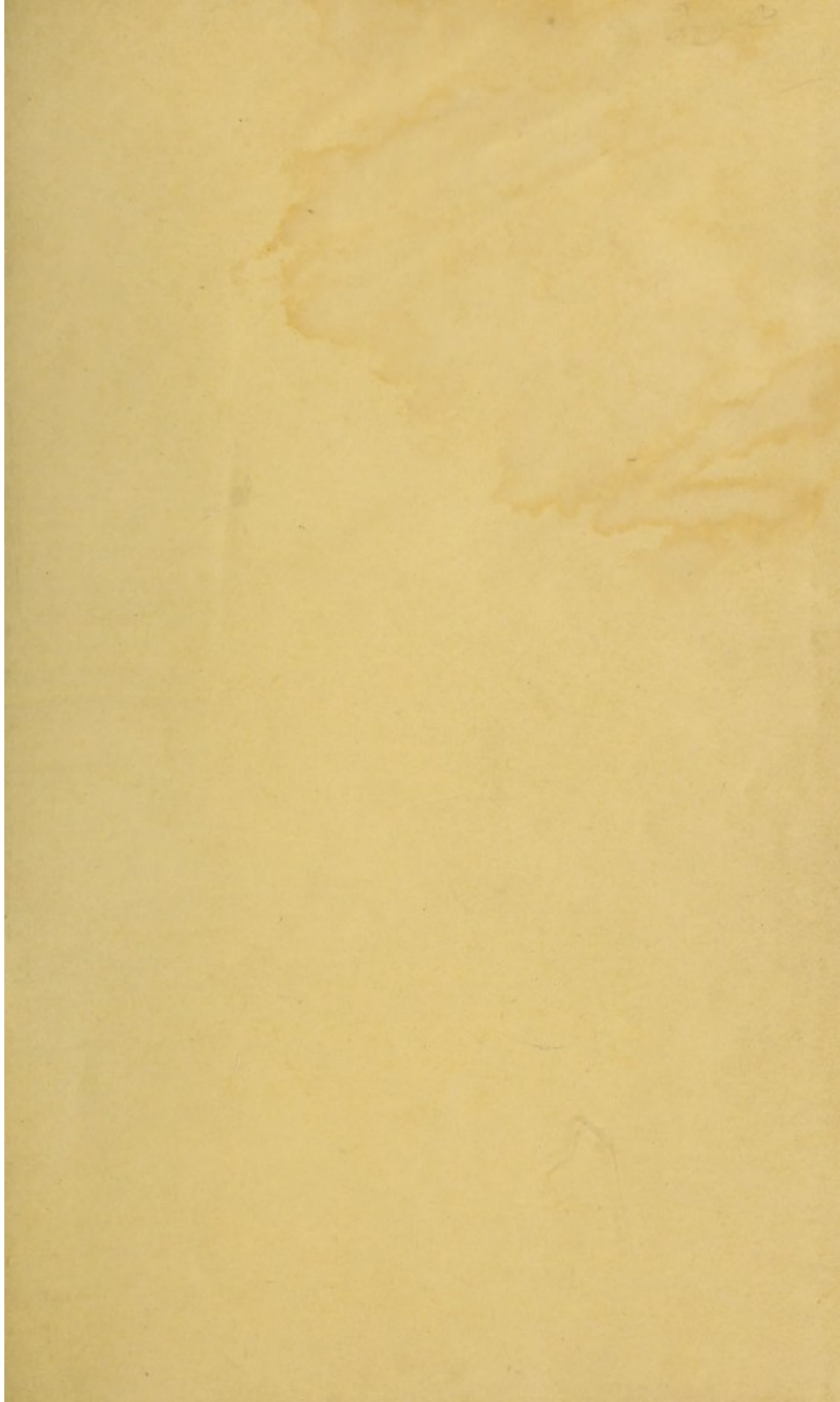
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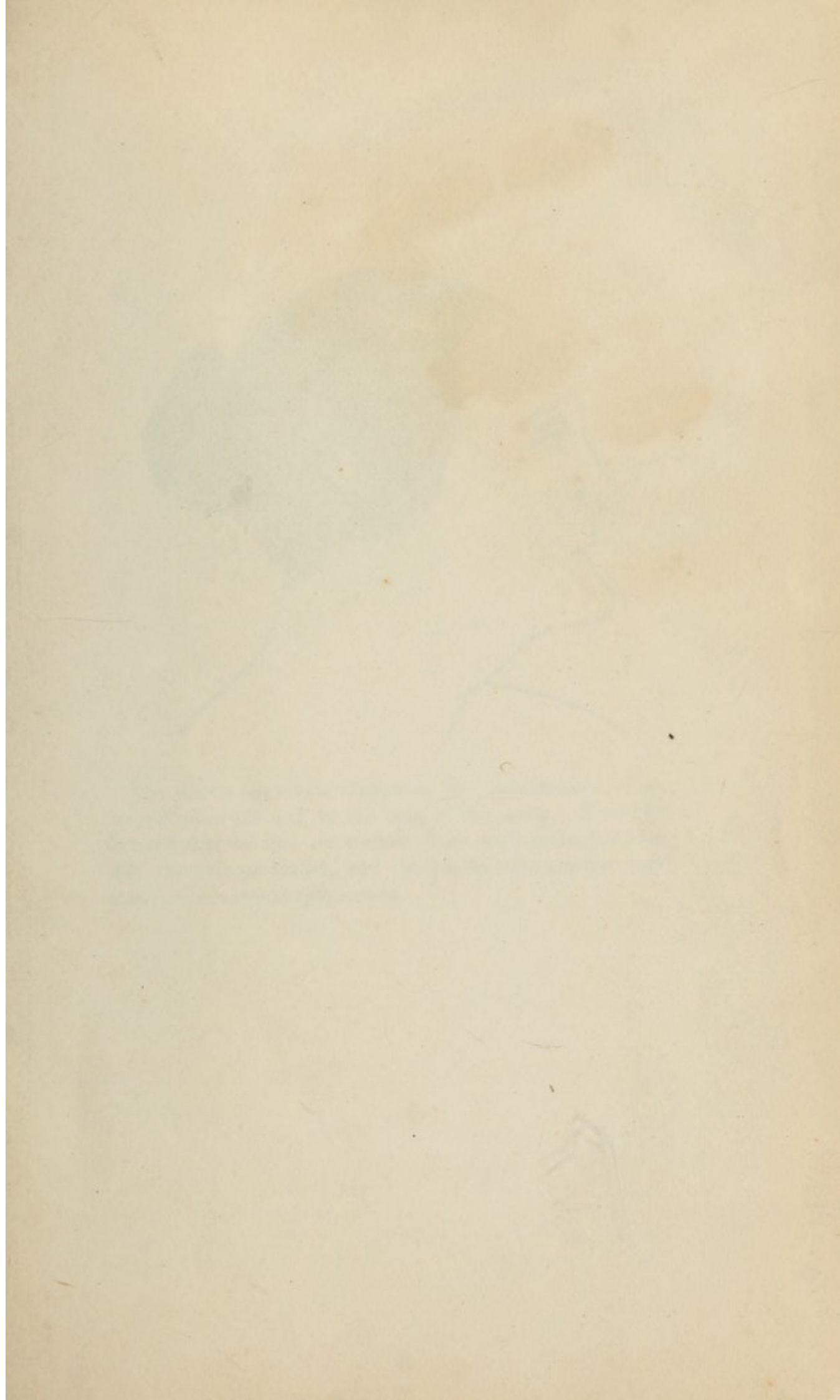


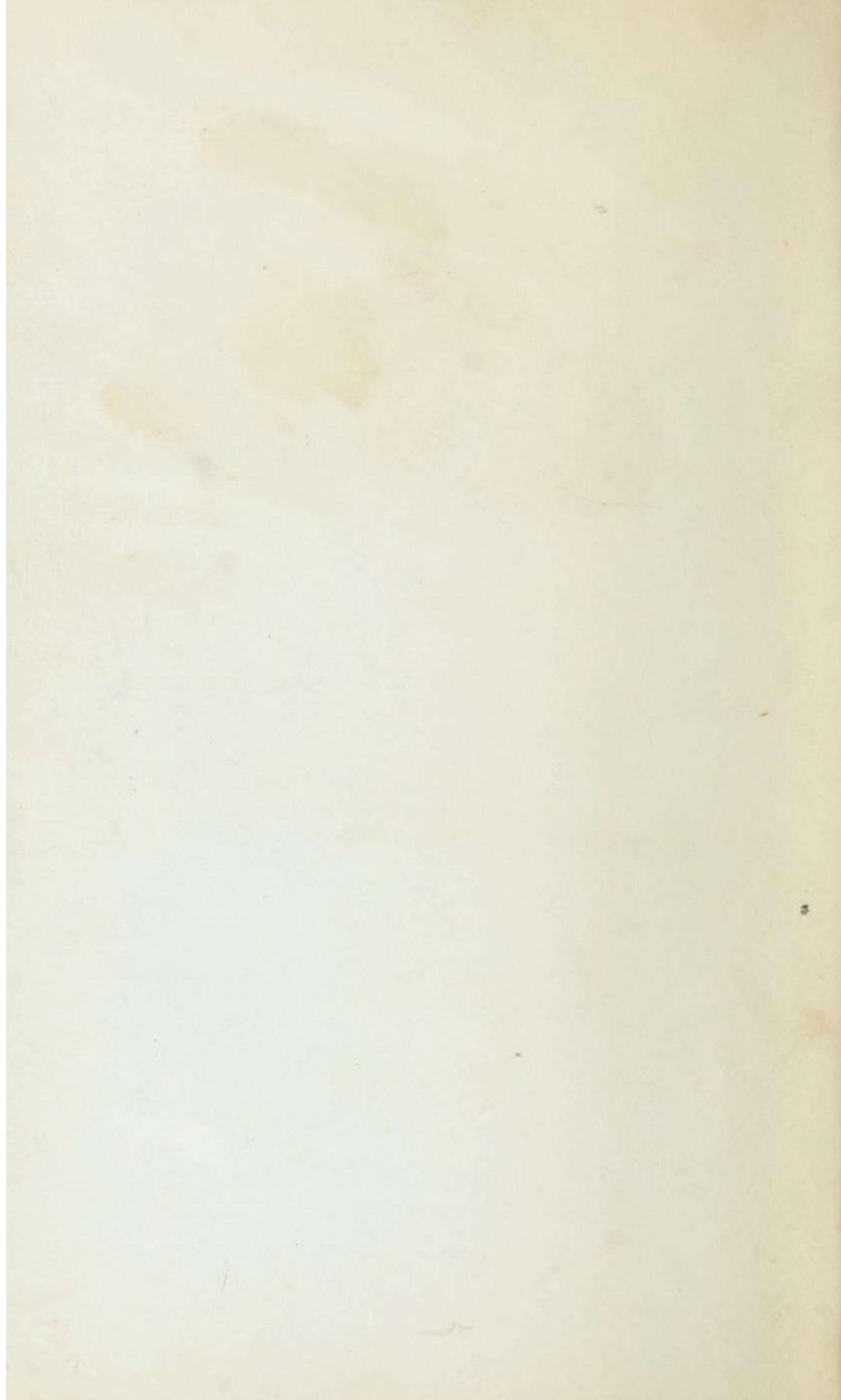






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The above engraving illustrates the countenance of an individual as affected by the loss of the teeth. It will be noticed that the lips are sunken from their usual position, that the chin protrudes, and the whole countenance presents an *unnatural* appearance.





The above engraving represents a countenance in contrast with the one given on the preceding page. It will be observed that the features present a natural and pleasing appearance.

FACTS  
FOR  
THE PEOPLE,

RELATING TO

THE TEETH;

SHOWING THEIR INFLUENCE UPON THE  
HEALTH, SPEECH AND LOOKS;

WITH

DIRECTIONS FOR THEIR CARE AND  
PRESERVATION.

---

BY T. D. THOMPSON, D. D. S.,  
Of the Baltimore College of Dental Surgery.

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BOSTON:  
B. B. MUSSEY AND COMPANY.  
1854.

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## P R E F A C E .

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“ Judge of books as of men. There is none wholly faultless or perfect. That production may be said to be a valuable one by the perusal of which a judicious reader may be the wiser ; and is not to be despised for a few deficiencies or inconsistencies.”—*Littell's Living Age*.

From our own observation we have been convinced that there has been, and is still existing, a want of proper information respecting the teeth. The great influence which these little, and *much abused* organs exert on the general health, is not sufficiently realized. A familiar treatise, containing correct information on this subject, should have a place in every family ; much *suffering* and *pecuniary* expense might thus be saved.

It is hoped the present volume contains all necessary information for general use. Our belief is, should its teachings be faithfully carried out, a great amount of the suffering from toothache, and from impaired and broken constitutions, (the result often of diseased teeth) would be prevented. There is not the slightest reason for doubt, that *dyspepsia*, with all its train of suffering, is often induced by a diseased state of the teeth and mouth ; therefore the necessity of proper information on this subject.

Much of the matter contained in this volume has been selected from eminent practitioners, and from those who stand high as writers on the subject of dentistry. No efforts have been spared to place before the public the most valuable information on the subject discussed.

No merit is claimed as to authorship.

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# CHAPTER I.

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## HISTORY.

Before entering upon the more practical parts of the subject we are about to consider, it may not be inappropriate, or without interest to the reader, if we give a few facts relative to the early practice of Dentistry, and its present stage of improvement.

I am aware that there cannot be much to interest the general reader, in this portion of our treatise.

The earliest date which we have noticed, with reference to the practice of Dentistry, is the year 460 B. C.

Heroditus the Greek historian, at this early period, while journeying in Egypt, noticed the fact that the healing art was divided into the two branches, medicine and surgery. He states that there were some surgeons who treated diseases of the eye, others of the ear, and still others of the teeth.



There can be no doubt that the operations upon the teeth referred to by Heroditus, were rude in their character, yet they most strikingly indicate the degree of refinement existing among the Egyptians at this early period, and evince the care which they bestowed upon these beautifying and valuable organs. We think it absurd to speak of refinement where the teeth are entirely neglected.

The ancient Greeks and Romans, who worshipped at the shrine of the Goddess of Beauty, did not place too high an estimate upon these pearly jewels! We have no authentic record upon the extent to which Dentistry was practiced by these people; but, from what we can learn, it could not have been inconsiderable.

The most ancient and valuable writings which relate to the teeth are those of Galen, who flourished in the second century after Christ. He had access to the most splendid and valuable medical library of his time. This was afterwards destroyed by fire.

During the period of the dark ages learning was neglected and the arts almost forgotten, but, as Dr. Harris remarks, "during this pause in the vitality of learning, Dentistry fared no worse than any other science. Demonology and the

curative art were antagonistic, and the cabalistic mummerly of gloomy monastics, ascetics, was called in to eradicate pain and disease, by the aid of charms and incantations, remedies that piety ever consider worse than the suffering of bodily sickness."

Since Heroditus much study has been devoted to this important subject, and much valuable knowledge respecting it has been preserved for our use ; but it is only within the last two centuries that Dentistry has received that attention which its close connection with the general health and happiness of man demands.

As we have already intimated, it is not our design to give a connected history of the origin and progress of Dental Surgery, but to show to those of our readers who may be unacquainted with the fact, that it is not a science of modern origin.

All who have attained to any considerable age, and have had occasion to notice the practice of Dentistry, must be aware that its importance is every year becoming more felt and acknowledged.

The comparatively rude manner in which Dental Surgery has been practiced, is now giving way to a degree of refinement before unknown ; nor has the art *yet* reached its highest

degree of perfection, but new efforts are being made, and we may hope for still more valuable improvements.

At the present time many strong and scientific minds are laboring in this department of Surgery, and, by giving it the aid of their long experience and observations, are doing much towards its advancement.

\*A profession is estimated by the same rational law which leads the mind to the discovery and appreciation of beauty, namely, the association connected with it. If the practice of the Dental profession demands science and education for its study, and its dispensation be connected with human life and human happiness and comfort, then must it stand in the position of a calling of high estimation. And that such is gradually becoming the case, may be perceived by the well marked division which is widening between the regular and irregular practitioner; the value which is placed on a member of the profession in whom the community have confidence; and the occasional requests to the faculties of Dental Institutions for graduates of professional and moral excellence, to fill vacancies in practice. To be confident that this feature of change

\*Dr. C. O. Cone.

is to go on and be permanent, we have only to know that it rests on public necessity. Go where we may, we find the community jealous of the qualifications of the profession, and loud in complaints of its abuse and practice.

The improved manner in which the study of the Dental profession may now be pursued is worthy of notice.

Colleges for imparting instruction in Medicine, Surgery, &c., have long been established, and the world has felt and appreciated their worth. They are looked upon as the true sources of correct information in this science.

All mechanical callings require a previous course of instruction to make proficient artizans. No trade or profession can be assumed without some practical experience.

The Dental art, to be of practical benefit to the world, must be taught by practical and competent instructors. Bungling mechanism is not winked at in this age of improvement; much less should imperfect and unskillful operations be countenanced when performed on the human system. The human body, so delicately constructed, should never be entrusted to a tinker's mercy, or a soulless money-catcher.

The Colleges which have been established

within the last ten or twelve years, in different sections of the United States, have created a new interest on the subject of Dental education, and have changed entirely the whole aspect of the profession, and given it an onward impetus that will crush empiricism, and cause true merit to be appreciated.

To the U. S. belongs the honor of establishing the first Dental College in the *world*. This work was accomplished through the untiring exertions of a few devoted individuals. The names of Haden and Harris will be handed down to posterity with a pleasant memory of the profession to which they devoted their lives.

A College where Dental lore and science is imparted, is of but late history. The Baltimore College of Dental Surgery was founded in the city of Baltimore, A. D. 1839. The object of this Institution may be better learned by the following remarks of Dr. Harris: "A few months previous to the institution of the American Society of Dental Surgeons, the Legislature of Maryland chartered a College, with four professorships, for the purpose of affording more ample facilities of instruction in the branches of knowledge necessary to the education of an accomplished Dentist, than could be furnished by any

private teacher, and thus securing to the public a sure guaranty against the impositions of empiricism. The object of this institution is, to give to those who receive its instructions, a thorough Medico-dental education, so that when they enter upon the more active duties of the profession, they may be able to practice it, not only as a mere mechanical art, but upon sound scientific principles, as a regular branch of medicine. While the head is being educated in such branches of general medicine and surgery as is deemed necessary to a successful practitioner in this department, and in the principles proper of Dentistry, the fingers of the student are, at the same time, regularly drilled every day in the various mechanical manipulations belonging to it, so that those who graduate in the Baltimore College of Dental Surgery go out with advantages that can seldom be obtained from private instruction. This fact, it is believed, will ever connect the destinies of the Institution with the welfare of the profession in this country."

The Baltimore College of Dental Surgery is favorably known in this country as well as in Europe, from whence it receives a part of its patronage. More graduates go to the south and southwestern States to practice their profession, than

come north, thus the College is more favorably known in those sections of our country.

Since the foundation of the Baltimore College there has been three others established in different sections of the U. S. The next College in point of age is located at Cincinnati, Ohio ; it is a flourishing institution, and its influence and instructions are felt throughout the western States.

The third College was founded in Syracuse, N. Y., in the year 1841, and promises no less good to the public than the one last mentioned.

And there is another Dental College in the city of Philadelphia, founded in 1852.

These Colleges, with various associations of Dentists in different sections of our country, are doing much to advance and perfect the science of Dental Surgery.

## CHAPTER II.

## INTRODUCTORY REMARKS.

It requires no labored argument to prove to a reflecting mind that too little attention is given to those studies that relate to the Physiological and Pathological conditions of the human system, and to its healthy and diseased condition.

The pursuits of the student or scholar, in a course of education, are directed to any other study than that which relates to their physical being. We do not say that it is necessary to pursue these studies to a very great extent, but believe it to be the duty of every individual enjoying the privilege of a common school education to possess some information in regard to the delicate structure in which their souls exist, or, "the house I live in." We may say, without fear of contradiction, that there are few persons in any community who have even the most limited knowledge of their own bodies.



The mind may be well trained and stored with general information ; it may be well versed in Grammar, Geography, Mathematics, Algebra, Astronomy, Mineralogy, Conchology, Geology, Botany, &c. ; it may with ease solve most questions relating to these studies, but at the same time be almost entirely ignorant of the laws which govern their physical being. Should this so be ? Should we labor to obtain a knowledge of almost every other subject, and entirely overlook the great principles on which our present health, and consequently our great physical happiness depends ? Of what avail is it to cultivate the mind, when it is every day less able to devote its acquirements to the accomplishment of its purposes.

Proper observation and reflection will teach us that we cannot trifle with the laws of our physical being, without suffering the penalty of such an infringement.

The devoted piety of the student, or the great good he is hoping to accomplish for mankind, will not palliate the suffering consequent on a disobedience of physical law. We see the respected, beloved and useful of society cut off day by day, even in early life. Is there no remedy for such cases ? We think there is. " Know

thyself" suggests to us the remedy. Know the needs and wants of your physical being; fire will burn, and disobedience to nature's laws will inevitably bring suffering and premature death. This truth should be strongly impressed upon the minds of all. If we would avert many of the diseases which now afflict us, it is necessary that we acquire some knowledge of the science of Physiology.

It is true we cannot always prevent pain and physical suffering, but we may greatly lessen them, and thus better and more securely promote our happiness and usefulness in society.

"The wise may suffer, wreck the foolish must,  
Learn, then, early to be wise."

It is a fact of history that the Romans and Spartans required by law that the people should be *physically* as well as *mentally* educated. A writer refers to it in the following language:—  
"This system prevailed for ages, and only went into disuse when monasteries were established, and literary men drew on their monkish cowls, divorcing themselves from practical life, from usefulness, from realities, turned book worms, crawled into cloisters, wrapped themselves in theories and hypotheses, wove around them the net of sluggishness and torpor, and, much like other worms, dozed and died in them."

Such was the parentage of that system of education which refuses a knowledge of the wants and diseases of the human system, the means of its preservation and health ; and such the system which usually consumes the appointed time for study with perusal of subjects unnecessary to life, health or happiness."

It is true that the subject of Physiology has not been abandoned by students, nor has it been entirely shut out from the young. But it is very evident that the importance of its principles are not sufficiently enforced, from the fact that few if any traces remain after the study has been relinquished. This cannot be said in regard to the principal rules of Arithmetic. Addition, multiplication and interest, these are remembered and improved while the laws of health are unknown, and little time is given to their investigation. From what we have already said, is it not conclusive that a knowledge of Physiology has claims prior to any other common or general study ? for if the health be not regarded how can we expect to enjoy active and well regulated minds?

Every building should rest upon a safe foundation, for if this be insecure, fissures and open-

ings will here and there be seen in every part of the edifice, and the whole structure will ultimately totter and fall to the ground.

Let our youth be physically trained, then will they possess strong and active bodies ; then will be laid the foundation for vigorous and active minds.

Health must be based upon the Physiological principles of our nature, otherwise there is no safeguard against pain and physical suffering ! Disease, with insidious and hasty step, lurks about the frame-work of man, and takes away one support after another, until it leaves the clayey fabric in irrecoverable ruin.

It is not our design in this short treatise to discuss the general laws of Physiology, but to direct the attention of our readers more particularly to one important branch of it, namely, the **TEETH**. This part of the physical organization is much abused by a great majority of our citizens ; the young make them store-houses for sweetmeats and candies, or apply them to the very delicate purpose of cracking nuts ; the lady or Miss uses them as a substitute for scissors in cutting thread, &c. ; men make them serve as a *mill* for grinding the nauseous weed tobacco, or convert them into the wall of a smoke-house.

Nearly all are chargeable in some way with unpardonable abuse of the teeth ; they treat them as if they were of no great value, or at least of very little consequence, and as if the sooner they were removed out of the way the better.

The ignorance manifested in regard to the teeth, and the important relation which they hold to the system, is astonishing.

We have heard many make use of the following expressions : “ I do not care if my teeth are decayed, if they do not ache ;” “ I wish I had no teeth, they are so much trouble ;” “ I do not see what they were made for, they are only an annoyance.” It is not the teeth that are in fault, but the neglect and abuse of them by those who thus complain.

When the teeth are thus treated they begin to manifest their importance ; days and nights are often spent in extreme suffering, while the long catalogue of prescriptions are applied with little effect. As a last resort the forceps of the dentist must be applied, and those organs, which might have been of invaluable service, must be removed.

An individual once said to us that he would be willing to pay *one hundred dollars* a tooth if he could secure a good set of natural teeth. But

money cannot always restore what neglect or abuse has sacrificed.

The teeth are not isolated organs; their vascular and nervous connections with other organs are such, that their disease or loss usually affect the system sympathetically, and the disease arising from this cause is often more aggravating than the pain which results from the disease of the teeth themselves.

How great their importance to distinct or correct enunciation; how imperfect the utterance when a deficiency of these organs exists; it is often laughable to listen to the "mitherable lithp," especially when it proceeds from the lips of some female, who may possess all other charms, but, being deficient of one, namely, *beautiful teeth*, the others fail to attract or please. We can think of no deficiency with regard to personal appearance, that strikes the eye more unpleasantly than blackened and decayed teeth. Beauty of features, of complexion, or of form; splendor of dress, pleasing manner, or varied accomplishments, all these personal attractions are greatly lessened when deficient of these "gems of nature." How often are our sympathies awakened in witnessing the inconvenience arising from the disease or loss of the teeth. The distorted and

unnatural action of the lips in attempting to articulate, and the effort to conceal the deformity arising from their impaired condition ; the constrained expression of the healthy laugh, and the premature old age appearance with which their loss marks the individual countenance, are all unpleasant exhibitions. These and many other considerations should be impressed upon the mind of every individual wishing to promote good health, or desirous of making a favorable impression on others.

The preceding inducements might appear to be sufficient, but there are others which we consider of greater importance.

The effects of these diseased organs upon the nervous system keeps it in a state of continual irritation, and often makes what would otherwise be a pleasant and happy disposition, a fretful and irritable one. This is a constant source of trouble and unhappiness to the persons possessing it, and an annoyance to all around them.

Again, the food cannot be properly masticated ; it becomes vitiated by coming in contact with diseased teeth and gums, which exude an unhealthy secretion. This secretion mingling with the food lessens its nutritious properties, pollutes the blood, and hence deranges the whole system.

Again, the blood becomes more vitiated by the passage of the air through a diseased channel to the lungs; this impure air irritates the delicate membrane which lines the air passage to these organs, and is often the ultimate cause of serious and fatal diseases.

The teeth also to some extent indicate the general character, and mark an individual as being cleanly or slovenly in his personal habits.

Lord Chesterfield, whose rules on etiquette have been extensively read and approved, in a letter to his son remarks, "that fine and clean teeth are among the first recommendations to be met with in the common intercourse of society."

Lavater, who was noted as a physiognomist, remarks, "that the countenance is the theater on which the soul exhibits itself," and adds, "as are the teeth of man so is his taste."

The following beautiful extract is taken from the French Dictionary of Medical Science, vol. 8, pp. 327, 330.

"The teeth are the finest ornaments of the human countenance. Their regularity and whiteness constitutes its chief attraction. If the mouth exceeds its ordinary size, fine teeth serve to disguise the defect of conformation; and the illusion that usually results from the perfection



of their arrangement is often such that we imagine it would not have appeared so well, even had it been smaller. Observe the lady smile whose mouth discloses the perfection of their arrangement. You never think of the extent of the diameter of her mouth. All your attention is fixed on the beauty of her teeth, and the gracious smiles that so generously exposes them. These ornaments are equally attractive in both sexes. They distinguish the elegant from the slovenly gentleman, and by softening the features diffuse amiability over the whole countenance. Even the face of the black African, when he smilingly shows his sparkling teeth, ceases to frighten the timid beauty. Fine teeth are more especially necessary to woman, for it is her destiny first to gratify our eyes, before she touches our souls, and captivates our hearts. The influence that the teeth exercise in the production of beauty, justifies the præminence I have assigned them over all other attractions of the face. Let a woman have fine eyes, a pretty mouth, a handsome nose, a well turned forehead, elegant hair and a charming complexion, but only let her teeth be bad, blackened with caries, covered with tartar or viscid concretions; let her, in a word, exhale a contaminated breath, and the moment

she opens her mouth she will cease to be thought beautiful. If she, on the contrary, have small eyes, or a large nose, and is even positively ugly, yet if her teeth are regularly planted, white, and above all entire, (or at least those of them that are visible,) she, however frightful she may be, will appear agreeable the moment a smile comes to her aid, and will hear the words whispered around her that are so consoling to her vanity, "Ah, what beautiful teeth she possesses." Wherever nature, which is sometimes sparing of her gifts, has failed to bestow them on the teeth, and has made them deficient in form, and tarnished in color, great care and cleanliness should be used to hide these imperfections and faults. For then, if the teeth do not attract our regard, they will not, at least, affect with disgust."

## CHAPTER III.

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### ON THE ORIGIN AND FORMATION OF THE TEETH.

The origin and formation of the teeth being a subject of great importance, we deem it proper to introduce some remarks, on this part of dental physiology.

This is a part of Physiology that should not be overlooked, as the formation of the tooth will determine its future value. For our remarks on this subject we are indebted to those whose practical observations will give greater weight to the facts which we may state.

Prof. Harris remarks as follows :

“Of all the operations of the animal economy, none are more curious or interesting than those which are connected with the production of the teeth. In obedience to certain developmental laws established by an All-wise Creator, it is carried on from about the sixth or seventh week

of intra uterine existence, except when interrupted by general or local disease, or some other cause, with the nicest and most wonderful regularity, until the completion of the organs; and, although so secretly conducted as to prevent scrutiny from detecting the manner by which it is effected, enough is ascertained from its progressive results, to excite in the mind of the physiologist the highest admiration."

"From small mucus pupillas, observable at a very early period of foetal life, situated in a groove lined by the mucus membrane of the mouth, and running along the alveolar border of each jaw, which is at first shallow, but deepening until its edges unite and it becomes divided by transverse septa into separate and distinct compartments or follicles, one for each tooth, they gradually augment until they attain the shape and size of the crowns of the several classes of teeth they are respectively destined to produce. Having arrived at this stage of their formation, they now begin to ossify, first on the cutting edges of the incisors, the apices or points of the cuspidati and bicuspides, and eminences of the molar; from thence over the whole surface of their crowns until they become invested in a complete layer of bone, and so on, layer after

layer, one with the other, is formed, until the process of solidification is completed. But before this process has progressed very far, the enamel and roots of the teeth begin to form, and these, including dentition, are gone through with previous to the completion of the ossification of the pulps."

"In the mean time, in anticipation of the loss of the first denture, a second is forming, and as the teeth of the one are removed they are promptly replaced by those of the other. Thus, by this most beautiful and most admirable provision of nature, the first set of teeth, intended only to subserve the wants of childhood, while the jaws are too small for such as are required for an adult, are removed, and replaced by a larger, stronger and more numerous set."

We would like much to enter into a somewhat extended description of this very interesting portion of anatomy, but feel ourselves obliged to abbreviate as much as possible. It certainly is a subject of very great interest; those who have given any attention to it whatever, have been amply rewarded in noticing the peculiar operations of nature in this formative portion of animal being. The peculiar nature of this process is such that it has enlisted the labors of several

anatomists ; of early date we may name Eustachius, who wrote in 1563 ; several years later the celebrated French anatomist and surgeon, Urbain Hemard ; coming down to a still later period we find several others, among them the names of John Hunter, Jordain, Blake, Fox, Currier, Serres, Delabarre and Bell. But for more definite instruction on this subject we are indebted to Arnold and Goodson ; more particularly the last named gentleman, whose researches appear at length in the Edinburgh Medical and Surgical Journal, Jan. 1, 1839. Those wishing to examine a minute and interesting description of the formation and early anatomy of the teeth, would do well to acquaint themselves with the writings on this subject.

The formative period is a very important one as connected with the subsequent value of the teeth ; for, as their original formation is, so will be the strength and value of these organs. The health or disease of the parent or nurse at this period, exerts a great influence on the forming teeth. As the nutriment imparted to the infant may contain or lack the requisite properties, so will the teeth be weak or strong.

Another fact to be considered in connection with the formation of the teeth, is the health of

the infant or child. An infant or child that is sickly during the formation of these organs, usually possesses teeth that will be easily impaired, even if they should not be diseased on their first appearance through the gums. This may be attributed to the altered condition of the blood, from which alone the teeth are formed; during the action of disease on the system the formation process must be imperfectly carried on, as nutriment in sufficient quantity and proper quality cannot be taken to support nutrition.

The teeth being slow in their formation from a papillia in a pulpy or plastic state, developing themselves step by step, must suffer from all the various changes which the system may undergo during the various periods of their formation.

Dr. C. A. Harris remarks as follows on this subject:

“Although the operations of the economy are so secretly carried on that it is impossible to comprehend their mechanism fully, it is well ascertained that the phenomena that results therefrom, are influenced and modified by the manner in which they are performed. If they be deranged, the blood from which the calcarious materials that form the basis of the osseous tissues are derived, is deteriorated, and furnishes these earthy

salts in less abundance and of an inferior quality. Hence the teeth that ossify when the system is under the influence of disease, do not possess the characteristics necessary to enable them to resist the assaults of the corrosive agents to which the teeth are more or less exposed, and that rarely affect those that receive their ossific matter from pure blood."

As it is important for parents, or those having the care of children, to know at what age the first teeth make their appearance through the gum, we have copied in this connection the time as specified by Thomas Bell.

"The four central incisors appear at from five to eight months; the four laterals from seven to ten; (these comprise the eight front teeth,) the four anterior molares from twelve to sixteen; the cuspidati, or eye teeth, (as they are commonly termed) from fourteen to twenty, and the four posterior or second molares, from eighteen to thirty-six. There has been, and may yet be, exceptions to the periods above specified, but these will prove correct in a large majority of cases, and as a general thing may be relied on.

As we have already hinted, much depends upon the peculiar qualities of the blood in the formation state of the teeth, and in fact of every part of



the system, more especially the bony and muscular. Keeping in view these very important facts, we should endeavor to regulate the diet of children so as best to secure our object, namely, the building up of a strong and muscular body. Let the nutritive qualities of the food be examined and discussed; do not let the child's peculiar appetite be consulted, but let the parent's more mature judgment and *reason* be the law. We all know very well to what course the child's appetite or desire in the choice of food tends.

Every observing parent must have learned that sweet preparations, of whatever description, whether pies, cakes, sweetmeats or candies, or any of the thousand and one preparations of a luxurious or delicate description, which are in common use in refined society, will be more readily received by the child than any of the more solid or appropriate kinds of food. But parents should inform themselves as to which is, or may be, of the greatest benefit to the child, which will secure its best possible health and future well-being.

They should not let prejudice, but known physical law, exert an influence in their decision; neither the child's peculiar appetite, but a prop-

er knowledge of the nutritive qualities of the food.

Our readers will allow us to give in addition, some facts interesting and important to notice.

The observations which follow are copied from an article entitled, "The food and the teeth; observations on the inorganic constituents of the food of children, as connected with the decay of the teeth, and the Physical constitution of women in America, by James Paul, M. D.

"In no country in the world are children more fair and beautiful than in America; and, as the young girl grows up to womanhood, we see in her a full realization of that being forming in the hands of Divinity, portrayed by the poet, as seen by Adam in his dream :

"Under his forming hand a creature grew,  
Man-like, but different sex; so lovely fair,  
That what seemed fair in all the world seemed now  
Mean, or in her summed up, in her contained,  
And in her looks ;"—

"We see this young and lovely being—the forehead well developed—the countenance rather elongated, relieved of the harsher outlines of the European natives—with fragile form, and small but well developed bust, flitting for a few short years among us, and then—yes, then there comes a change. Ere five and twenty summers pass, this flower begins to fade—the rounded

form shrinks—the bloom of health decays ; and if she escapes the destroying angel's death-like grasp, a wreck of former self remains.

“ Why should this be so ? the robust of other countries come to this continent—they live in comfort, their food is excellent in quality—their progeny is like themselves, but even now in the very first generation, does the degenerating process make itself manifest—the teeth begin to decay ; and girls while yet children, have to visit the dentist to have them cleansed, scraped and plugged.

“ It is certainly to be deplored that the females of this continent, descendants of European parents, should be so much afflicted with caries of the teeth—the decay of parts formed of substances which enter into the composition of some of our hardest minerals—marble, bone, earth, and fluor-spar—and this decay unfortunately occurs in early life—in girls yet at school ; and many a young woman ere she has attained a marriageable age, has had to replace the natural with the unnatural, though more enduring, enamel of the artist's formation. This ought not to be ; God made all mankind alike ; in no portion of the earth are natives found to lose their hands, or feet, or tongues, or eyes, and there can

be no cause why the inhabitants of this land should lose their teeth. It is not so in the old countries from whence the progenitors of the present race have come.

“One cause of this affliction is, in the minds of many, attributed to the great and sudden changes of temperature experienced on this continent—the thermometer rising and falling 20, 30, and even 40 degrees in twelve hours. But if attributable to these sudden changes, we know that sudden expansion by means of heat or sudden contraction by means of cold, causes the particles of which bodies are composed to tear themselves asunder; consequently to crack, break and fall to pieces. But this is not the case with the teeth of our females; a carious or decay commences most generally in the side of the tooth, extending through the enamel, which is sometimes involved in the destruction; other times it is left a crust or shell, to snap or break off in small pieces when unable to resist the pressure of whatever may be placed against it; beside, for the most part, the teeth are sheltered from these sudden changes, and kept at a temperature nearly amounting to blood heat at all seasons. I do not think, therefore, that we can place the general destruction of the teeth, and consequent

affliction of the females of America, to this cause. I fear we must rather look for it to constitutional weakness, and this constitutional weakness to a deficiency of the inorganic or earthy constituents being taken into the system, more particularly at an early period of life."

After referring to the structure of the teeth, he remarks :

"I shall not now enter more fully into the structure of the teeth, but may briefly state that, like all other structures of the human body, the component parts are derived and deposited from the blood, by that mysterious and incomprehensible power that selects and deposits the necessary constituent in the formation of the several portions according to the use required."

Dr. Paul further observes :

"The question then presents itself, as to what is the nourishment or food best adapted and necessary to the wants of an infant, and what will secure the foundation for a strong frame and vigorous constitution ; for here, it must be recollected, is the starting point, (in by far the majority of instances.) We know that in some cases disease is hereditary—that the offspring unfortunately inherit from the parent constitutional defects ; but we also know that more misery, suffer-

ing and constitutional derangement are entailed on children by want of care and improper food in the first years of life, by which their hopes of health are blasted, and they are doomed to struggle through a weary life, to be hurried at last into a premature grave.

“The infant is entirely dependent on the nourishment derived from its mother, and nature has wisely ordained that the secretions from the mother is its very best food ; for we find in the composition of milk derived from healthy blood, all those ingredients we have hitherto traced as requisite to the formation of the bones and teeth ; and not only these but every constituent required for the life and growth of the individual ; milk contains the albuminous, saccharine, oleazinous, saline, and earthy compounds requisite and necessary for the health, strength and development of the infant child.”

Dr. Paul here gives an analysis of different milk, as human, cows, &c.,—after which he treats of the influence of the milk nursed by the child—likewise refers to the influence exerted by any peculiar state of mind the mother or nurse may be laboring under during the child’s nursing, and illustrates it by the following cases as recorded by Carpenter in his work on Physiology.

Illustrations from Carpenter's Physiology :

“A carpenter fell into a quarrel with a soldier billited in his house, and set upon the latter with his drawn sword. The wife of the carpenter at first, trembled with fear and terror, and then suddenly threw herself between the combatants, wrested the sword from the soldier's hand, broke it in pieces and threw it away. While in this state of strong excitement the mother took up her child from the cradle, where it lay playing, and in the most perfect health, never having had a moment's illness ; she gave it the breast, and in so doing sealed its fate. In a few moments the infant left off sucking, become restless. panted, and sank dead upon its mother's bosom. The physician who was instantly called in, found the child lying in the cradle as if asleep, and with its features undisturbed ; but all his efforts were fruitless—it was irrecoverably gone.

“A lady having several children of which none had manifested any particular tendency to cerebral disease, and of which the youngest was a healthy infant a few months old, heard of the death of an infant child of a friend at a distance, with whom she had been on terms of close intimacy, and whose family had increased contem-

poraneously with her own. The circumstance naturally made a strong impression on her mind, and she dwelt upon it the more perhaps as she happened at that period to be separated from the rest of her family, and to be much alone with her babe. One morning, shortly after having nursed it, she laid it in its cradle asleep, and apparently in perfect health; her attention was shortly attracted to it by a noise, and going to the cradle she found her infant in a convulsion, which lasted for a few minutes, and left it dead.

“A mother had lost several children from a convulsive disorder. One infant, however, survived the usual fatal period, but while nursing him one morning she had been strongly dwelling on the fear of losing him also, although he appeared a very healthy child. In a few minutes after the infant had been transferred into the arms of the nurse, and while she was urging her mistress to take a more cheerful view, directing her attention to his thriving appearance, he was seized with a convulsive fit, and died almost instantly.

These are interesting cases, and tend to show the great influence the mental affections exert on the secretion of milk, in rendering it deleterious in quality, and unwholesome to the infant.”



Dr. Paul, in discussing the nutrient qualities of different kinds of food, showing their component principles, their relative value in sustaining animal life, remarks as follows :

“To undertake the subject of nutrition, allow me to explain to you that food ought to embody two great principles ; one to nourish, the other to give heat to the body. And food, when consumed, is applied to one or the other of these purposes. Now in the process of digestion the constituents of the food are separated and arranged in three classes.

“1st. All that portion derived from animal food, eggs, the curd of milk, the gluten or adhesive portion of wheat and other grain, and whatever in animal or vegetable food can be rendered into *albumen*—of which the best example that can be offered in illustration is the *white of egg*, which is, in reality, nearly pure albumen—and the principal is therefore called *albuminous*.

2d. “All that portion of food derived from vegetables, starch, sugar, &c., that can be converted into *sugar*, in the process of digestion. This principal therefore is called *saccharine*.

3d. “All the fat, oil, &c., which when deprived of other substances, is left in the state of *oil*, and therefore called *oleagenous*.

“Now of these three, the *albuminous* is the *nutrient*, and the *saccharine* and *oleagenous*, the *clorifacient*, ‘or heat giving,’ and chemical analysis shows that they vary in composition.

“Now the albuminous, or nutritive, being that portion that affords nourishment to the body, contain those constituents required in the first place for the formation and giving strength to the different portions of the body, and when fully developed, of repairing the general waste continually going on in the system, whether from the usual wear and tear, fractured bones, or the ravages of disease. And the saccharine and oleagenous—the clorifacient or heat maker—to keep up a continual supply of fuel as it were, that the body may be kept at a regular and proper temperature, for you are no doubt aware there is a continual supply of carbon, or, in more simple language, of charcoal, required to keep up the natural temperature of the body; and what is not required for immediate use is stored away in the form of fat, to be called into action as occasion requires.

“We have seen, in the analysis of milk, that that fluid contains butter, cheese and sugar; consequently we can understand how an infant can thrive so well upon it—the case or casein of the

milk, containing the nitrigenised or nutrient principle which, together with the earth and salts contained in the milk, goes to form the bones, muscles, and the different tissues of the body—the sugar, which we have seen by the analysis, contains a large quantity of carbon in its composition, going to keep up the temperature of the infant, while the butter, in the nature of fat, is stored away in a healthy infant, filling up every vacant interstice, causing a roundness and plumpness, the pride and joy of the happy parent.” Now let us mark the difference of the babe that has been denied a milk diet, and is doomed by ignorance to be fed on starch and sugar; you will recollect that these two substances were composed of carbon, hydrogen and oxygen only. By a process of digestion which I need not here enter into, such food is converted into sugar, the carbon of which becomes the fuel by which the temperature of the body is kept up—there being no principal in the food to give albumen, there is nothing taken into the stomach upon which the gastric fluid can expend its solvent powers; the infant is, therefore, much troubled with acid cructations, and the stomach becomes weak and irritable. The want of the nutritive constituent of the food and the earths

and salts, &c., necessary for the formation of the bones of the teeth, show a lamentable deficiency in the child's development, and there being no fatty matter to be laid up the body is emaciated, the countenance is ghastly, the flesh and integuments hang soft and flabby over the bones, no absolute disease can be detected, the child is ravenous and hungry, and the unfortunate babe descends to the tomb a spectre, and an object of the most pitiful description. This is no fancy sketch, but one too often met with in the ordinary walks of professional life. And why is it so? Simply because the composition of the human frame, the component parts of our food requisite to produce that frame, and the process of digestion and nutrition is so little understood.

“We now advance from infancy to childhood. This is a period when the greatest attention is required in supplying nutriment to aid nature in the great work of developing the body. The child is now deprived of the maternal secretion and dependant upon food prepared for its use by the hand of man—perhaps living in a city, and deprived of pure and wholesome milk from the cow. And we know that there is a vast disproportion in the quality of the milk when the cow is country fed on the natural productions of

the farm, and when city fed on slops and grain, the refuse of the brewery.

“It is at this age that the great proportion of the bony substance is deposited; those of the extremities are lengthened, become more compact and stronger, and the substance of the teeth is deposited in the cell of gelatinous tissue. How necessary is it, then, that this subject should receive the utmost attention of parents. It has hitherto been too much the custom to leave all this as belonging to nature—as a thing we had nothing to do with. We have been too much in the habit of considering that nature furnished her own materials, and man had nothing to do with the operations. The potter cannot fashion the bowl without the clay, neither can bone be formed without clay. No, my friends, nature must be supplied with the material, which, although offered in the most incongruous forms, she has the power of decomposing, selecting from and supplying for the various purposes required; one portion, as we have already stated, to act as fuel to keep up temperature; another portion she selects to add to the flesh, the muscles, skin, and different tissues; and the earths which are held in solution, she carries away by vessels adapted for that purpose, and deposits them,

atom by atom, until they are compressed, and so strongly packed together, as to become what we call solid bone ; and all this so wonderfully wrought, that, as we have seen, small tubes are left in the hard stony formations, both of the bones and of the teeth, that nourishment may be supplied them, holding in solution the material of which they are composed, that natural waste and decay may be replaced and injuries repaired.

“It is to this nutrition, and to the earthy matter of which the bones and the teeth are composed, that I wish particularly to direct your attention.”

Dr. Paul, to illustrate the benefit derived from the use of the more common, but nevertheless the most nutritious kinds of food, remarks :

“Now let us take a glance at the inhabitants of two countries, nations which are no strangers on this continent. I take them as examples because the food of the *common people* of those countries is well known to be of the most common kind. I allude to natives of Scotland and of Ireland—the principal food of the one being *oatmeal* and of the other *potatoes*. We have heard a great deal of the famishing poor of those countries, and particuiarly of the latter—of the misery and wretchedness seen in every hovel ;

and there cannot be a doubt that famine walked through the land, when the blight and rot despoiled them of their potato crop, on which for so long a period, they depended as the great article of food. Now, allowing all this—allowing in the *best seasons*, the chief article of subsistence has been potatoes for breakfast, dinner and supper; glad, many of them, to get a little animal food once a week, or even far more seldom, for dinner. I now ask, what number in the thousands of emigrants from that country, who yearly arrive at our ports, are there, that show a constitution weak, fragile, or wanting in physical strength? Many no doubt arrive, worn down by disease and suffering, and in the last stage of debility; but let them recover from that state, and the robust frame and healthy constitution will be again developed; the bones are strong, the teeth undecayed, and the muscular energy only wanting to display itself; in fact when we wish to denote strength in women, we use the familiar phrase “strong as an Irish woman,” and all this from being reared on potatoes.

“But we have a stronger and more healthy race yet, from Scotland and the north of Ireland, who are generally descendants of the Scotch, and continue, in a great measure, the same

means in rearing their young. Now, as common, I will say the principal food of the youth of Scotland, high and low, rich and poor, except in the large cities, amongst those who class themselves as more refined and more civilized, but who number few in proportion, consists, for breakfast at least, of oatmeal—that is, porridge and milk, and milk, potatoes, and wheaten, oaten, and pea bread, or *bannocks*, at other times of the day. Animal food amongst the poor is a rarity; a meat dinner on Sunday, *only*, being common. Even among the youth of the better class, butcher's meat, or animal food, is by no means a principal article of subsistence.

“I may, however, casually remark, that the advantages to be derived from this wholesome food, has not escaped the observation of her majesty, Queen Victoria, who appears, in the multiplicity of her public duties, not to lose sight of the equally important duties of a mother; and we hear that her son, the heir to the crown of Great Britain, is as fond of his oatmeal porridge as the meanest peasant child in Scotland.

“How necessary, then, how important it is, if we expect to give strength and vigor to the constitution, that the food, in the first years of infancy and childhood, when the formative process is go-



ing on, should receive some further attention than has hitherto been given to it; and if our youth—if our young females have hitherto been deprived of the necessary constituents for the full development of every portion of the body—can we wonder that woman should be the delicate and fragile being she is; or that, by the decay which assails the teeth in early life, she would be deprived of an ornament of so much value? If this state of things can be altered—if the physical constitution of woman in America can be saved from further degeneracy—a purpose may be effected, of consequence even in a national point of view; for it is to the healthy and vigorous of woman that we must look for a race of hardy, vigorous and enterprising freemen.

“In conclusion I would briefly state, that this is a matter in which professional aid can avail little; it lies at the door, and must be the work of parents generally. It is for them to understand the great importance to be attached to the food on which their children subsist. They must see that it is wholesome and nutritious, and abounding in the earthy compounds so absolutely necessary to the proper development of their offspring. If the chief articles of food have hith-

erto consisted of compounds, made of superfine flour, corn meal and the fat of meat, let there be substituted in their stead, brown bread, milk, eggs, the lean of meat, and potatoes; let more attention be given to the nutrient quality of the food; let there be no deficiency of those articles containing the earthy materials, that the bones and teeth shall not be deficient in these constituents so necessary in their composition; and I should be inclined to hope that the evils which now exist will be lessened, and the physical organization of succeeding generations be equal to that of any nation that has ever existed upon the earth."

Knowing, as most persons must, the value of bread as a sustainer of animal life, being commonly called "the staff of life," how very particular should parents and others be, when providing this class of food, to procure that which contains the greatest amount of nutritious matter; that which shall be best adapted to the health of the individual or child. There has been some valuable statistics published on this subject, viz: the comparative value of different kinds of bread prepared from various grains, and the value of bread formed from the same kind of grain, (say as wheat) treated in different ways. We find

some valuable remarks on this subject in Dr. Paul's papers, which we think are worthy of mention. They are as follows :

“Of the inorganic constituents contained in wheat, and other cereal grains, I have already alluded to the benefit to be derived from using bread made from unbolted flour. On this subject allow me to refer to the difference of flour having much of the bran remaining, or superfine flour, or that in general use throughout this country, and on which Prof. Johnston has made the following curious but practical observations.\* Examining wheat and flour, as to the amount of nutrient or muscular matter, the fat forming principles, and the bone and saline material contained in grain in different states, he found that in 1000 lbs. of whole grain there were,

	Musc. mat.	Fat prin.	Bone and Saline.
	156	66	170
Fine flour,	140	20	60
Bran,		60	70

Taking the three substances together, according to Prof. Johnston, they contain, of the ingredients mentioned.

	Whole grain,	Fine flour.
Of muscular matter,	156 lbs.	130 lbs.
Of bone material,	170 “	60 “
Of fat,	28 “	20 “
	<hr/>	<hr/>
	354	210

\* Patent Office Report, 1847, pp. 116.

Accordingly the whole grain is one half more nutritious than the fine flour. It also shows the very great proportion of *bone material* that is, *earthy constituents* contained in the bran; no less than seven hundred out of a thousand parts, or a *little more than two thirds* of the whole.

Now by reference to the same work we find, in a communication from Mr. Bentz, the difference in the weight of a barrel of flour, without the bran, and when only the outer coating of the wheat is taken off. He says, "the weight of the bran or outer coating would, therefore, in common superfine flour, constitute the offal, weighing only  $5\frac{1}{2}$  pounds to the barrel of flour, whilst the ordinary weight of the offal is  $59\frac{3}{4}$  to 65 pounds of wheat in every barrel of flour. Now, if we estimate the earthy constituents two thirds of the offal or bran, we must consider that there is an actual loss of these important constituents, which might be reserved in every barrel of flour, of forty pounds.

*Again*, if we estimate according to the average of the consumption of flour to the amount or proportion, as one barrel to each individual, that every child shall consume annually only half a barrel of flour, then we find by the use of the superfine flour, as commonly used in families, the

child is deprived yearly of twenty pounds of those earthy substances which are required to form the bones and the teeth. When we speak of a child's consuming half a barrel of flour annually, it appears a large quantity, but if we reduce the same to a daily allowance, we find that it is little more than 402 or  $4\frac{1}{3}$  oz ; and every one must know that this would be a very small amount to limit a child. Yet we see how large a quantity of bone material would be added if unbolted flour was used instead of the present superfine flour. I may here add that the oatmeal used in Scotland, already referred to, contains the bran or inorganic constituents, while the oatmeal used in England is deprived of it. Now this is a great loss of the most valuable constituents in only one of the principal articles of food for children, and if we allude to another article, which is largely used in this country—I mean Indian corn, and I may also add the fat of meat, both of which children, if allowed, will partake of freely—we shall find that both of these abound more in clorifacient, or heat-sustaining principle, and for the deposition of fat, than the nutriant, and that they are quite deficient of the earthy material of lime, that material on which the proper structure of the teeth so much depend.

Perfect digestion being an important prerequisite to good health, we insert a few remarks on this *important* topic.

The dental organs are of primary importance ; they are intimately connected with the functions of digestion ; when in a healthy state they are the organs made use of in preparing the food for the stomach. Should these organs be impaired by disease, or be deficient, they perform imperfectly their legitimate office, and the food passes to the stomach in a crude state, thereby throwing upon that organ more than its natural amount of labor ; as a consequence of this excess of labor the stomach becomes impaired in its functional operations, and *dyspepsia*, with its train of diseases, follows.

The following remarks by Dr. Beaumont, relative to the subject of digestion, are worthy of a careful perusal, and the knowledge conveyed by them should be improved.

“The gastric fluid never appears to be accumulated in the cavity of the stomach while fasting, and is seldom, if ever, discharged from its proper secreting vessels, except when excited by the natural stimulus of aliment, mechanical irritation of tubes, or other excitants. When aliment is received, juice is given out in exact pro-

portion to its requirements for solution, except when more food has been taken than is necessary for the wants of the system. That the quantity of the gastric juice secreted from the walls of the stomach, depends rather on the general requirements of the system, than upon the quality of the food introduced into the digestive cavity, is a principal of the highest practical importance, and cannot be too strictly kept in view in dietetics. A *definite proportion* only of aliment can be perfectly digested in a given quantity of fluid; the action of which, like other chemical operations, ceases after having been exercised on a fixed and definite amount of matter. When the juice becomes saturated, it refuses to dissolve more; and, if excess of food has been taken, the residue remains in the stomach, or passes into the bowels in a crude state, and becomes a source of irritation, pain and disease for a long time.

The unfavorable effect of an undue burthen of food upon the stomach itself interferes with its healthy action; and thus the quantity really appropriated is not dissolved; the febrile disturbances are thus increased, and the mucus membrane of the stomach exhibits evident indications of its morbid condition.

The description of these indications, given by Dr. Beaumont, is peculiarly graphic as well as Hygienically important.

“In disease or partial derangement of the healthy functions, the mucus membrane presents various and essentially different appearances. In febrile conditions of the system, occasioned by whatever cause,—obstructed perspiration, undue excitement by stimulating liquors, overloading the stomach with food, fear, anger, or whatever depresses or disturbs the nervous system—the villous coat becomes sometimes red and dry, at other times pale and moist, and gives it smooth and healthy appearance; the secretions become vitiated, greatly diminished, or even suppressed; the coat of mucus scarcely perceptible, the follicles flat and flacid, with secretions insufficient to prevent the papillia from irritation. There are sometimes found on the internal coat of the stomach, eruptions of deep-red pimples, not numerous but distributed here and there upon the villous membrane, rising above the mucus coat. These are at first sharp-pointed and red, but frequently become filled with white purulent matter. At other times irregular circumscribed red patches, varying in size and extent from half an inch to an inch and a half in circumference, and



found on the internal coat. These appear to be the effects of minute blood-vessels of the stomach. There are also seen at times small aphtheus crusts, in connection with red patches. Abrasion of the lining membrane, like the rolling up of the mucus coat into small shreds or strings, leaving the papillias bare for an indefinite space, is not an uncommon appearance. These diseased appearances, when very slight, do not always affect, essentially, the gastric apparatus. When considerable, and particularly when there are corresponding symptoms, pulse, &c., *no gastric juice can be extracted by the alimentary stimulus*. Drinks are immediately absorbed or otherwise disposed of, but food taken in this condition of the stomach remains undigested for twenty-four or forty-eight hours or more, increasing the derangement of the alimentary canal, and aggravating the general symptoms of the disease. After excessive eating or drinking, chymification is retarded; and, though the appetite be not always impaired at first, the folicles become acrid and sharp, excoriating the edges of the aperture and almost invariably producing aphthous patches and other indications of a diseased state of the internal membrane. Vitiating bile is also formed in the stomach under these circumstances, and flocculi of

mucus are more abundant than in health. Whenever this morbid condition of the stomach occurs, with the usual accompanying symptoms of disease, there is generally a corresponding appearance of the tongue. When a healthy state of the stomach is restored, the tongue invariably becomes clear."

Dr. Carpenter in his "Human Physiology," remarks, that "Dr. A. Combe's commentary on the above passage, is too appropriate to be omitted."

"Many persons who obviously live too freely, protest against the fact because they feel no immediate inconvenience, either from the quantity of food or the stimulants in which they habitually indulge; or, in other words, because they experience no pain, sickness, or headache,—nothing, perhaps, except slight fullness and oppression, which soon go off. Observation extended over a sufficient length of time, however, shows that the conclusion drawn is entirely fallacious, and that the real amount of injury is not felt at the moment; for a wise purpose nature has deprived us of any consciousness of either the existence or state of the stomach during health. In accordance with this, Dr. Beaumont's experiments prove, that extensive erythematic

inflammation of the mucus coat of the stomach was of frequent occurrence in St. Martin, after excesses in eating, and especially in drinking, even when no marked external symptom was present to indicate its existence. Occasionally febrile heat, nausea, headache and thirst were complained of, but not always. Had St. Martin's stomach and its inflamed patches not been visible to the eye, he too might have been pleased that his temporary excess did him no harm ; but, when they presented themselves in such legible characters that Dr. Beaumont could not miss seeing them, argument and supposition were at an end, and the broad fact could not be denied."

It is not our design to discuss the subject of Physiology, only as it relates to the teeth. We have thought it proper, however, in some instances, to refer to such other parts as are directly connected with these organs. We think the preceding remarks on digestion, by Drs. Carpenter and Combe, will be read with interest.

The following table, prepared by Dr. Beaumont, always appeared of value to us as a table of reference.

The time of the food's digesting, as stated in this table, is presumed to be the most accurate one ever published—it being the only instance

on record in which experiments and observations on digestion have been made on a living person. Most persons are aware that Dr. Beaumont's experiments were carried on in the person of one Alexis St. Martin, whose stomach was perforated by a gun shot which never closed. Through this opening in the stomach of St. Martin, Dr. Beaumont noticed the operations of the stomach, and made various experiments as regards the usual time of reducing the food to chyme.

## DR. BEAUMONT'S TABLE.

*Mean time of Chymification.*

	Preparation,	H. M.
Beef with salt only,	Boiled,	2.45
“ steak,	Broiled,	3
“ fresh lean, dry,	Roasted,	3.30
“ old, hard, salted,	Boiled,	4.15
Mutton, fresh,	Broiled,	3
“ “	Boiled,	3
“ “	Roasted,	3.15
Lamb, “	Broiled,	3.30
Venison Steak,	“	1.35
Pork, recently salted,	Raw,	3
“ “ “	Fried,	4.15
“ “ “	Boiled,	5.30
Pork, fat and lean,	Roasted,	5.15
Pig, sucking,	“	2.30
Veal, fresh,	Broiled,	4
“ “	Fried,	4.30
Liver Beef's, fresh,	Broiled,	2
Heart, animal,	Fried,	4
Pig's feet, soused,	Boiled,	1.45
Tripe, “	“	1

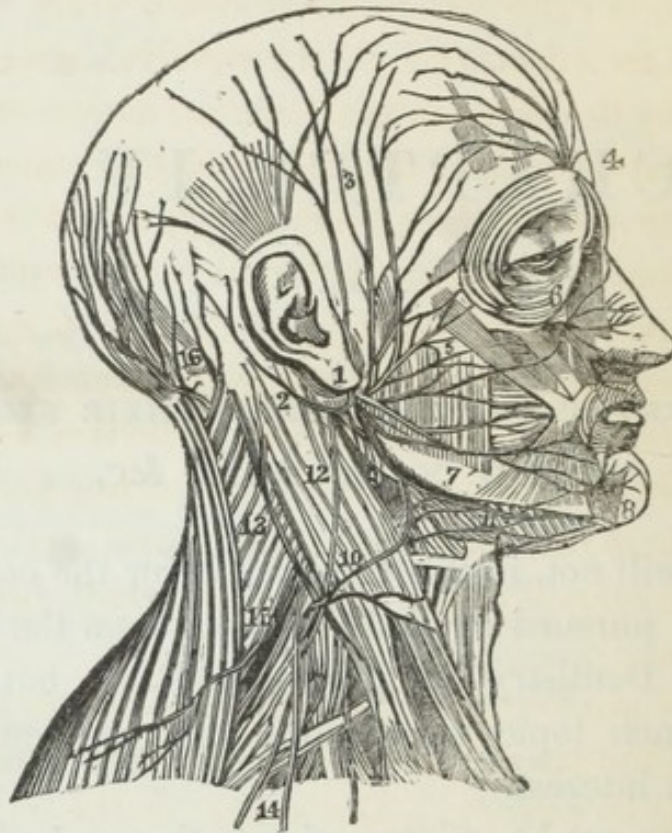
	Preparation,	H. M.
Eggs, whipped,	Boiled,	1
“ fresh,	Raw,	1.30
“ “	“	2
“ “	Soft Boiled	3
“ “	Rare “	3.30
“ “	Roasted,	2.15
“ “	Fried,	3.30
Turkey wild,	Roasted,	2.18
domestic,	“	2.30
Goose wild,	“	2.30
Ducks domestic,	“	4
Fowls “	Boiled,	4
“ “	Roasted,	4
Ducks wild,	“	4.30
Trout, Salmon, fresh,	Boiled,	1.30
Codfish, cured dried,	“	2
Salmon, salted,	“	4
Oysters fresh,	Raw,	2 55
“ “	Stewed,	3.20
Sage,	Boiled,	1.45
Tapioca,	“	2
Cabbage, with vinegar,	Raw,	2
“ “	Boiled,	4.30
Beans,	“	2.30
Parsnips,	“	2.30
Potatoes,	Roasted,	2.30
Bread, wheat, fresh,	Baked,	3.30
Potatoes,	Boiled,	3.30
Chicken soup,	“	3
Soup, vegetable and bread,	“	4
Gelation,	“	2.30
Milk,	“	2
Cheese,	Raw,	3.30
Suet, mutton,	Boiled	4.30

## CHAPTER IV.

## THE NERVES OF THE TEETH, THEIR SYMPATHIZING CONNECTIONS, &amp;C.

We will not, in this treatise, follow the course usually pursued by those who write on the subject of Dentistry for professional use, but will select such topics as we think may awaken the greatest interest.

It may not be uninteresting to those who have not devoted much to the subject of Physiology, to learn how so much suffering can arise from those little organs, the teeth. We all acknowledge that we are under some obligations to a something called a nerve, for that exquisite torment, tooth-ache ; but as to the connection which these nerves have with the system, and how such distressing effects are produced, is not usually understood. The following engraving illustrates the Facial Nerves.



This Fig. represents the distribution of the facial nerves, and some of the branches of the cervical plexus of nerves. 1. The facial nerve, escaping from the stylo-mastoid foramen. 2, The posterior auricular branch. 3, The temporal branch. 4, The frontal nerve. 5, Facial branches. 6, The infraorbital nerve. 7. Facial branches. 8. The mental nerve. 9. Branches to the face and neck. 10, The superficialis colli nerve, forming a plexus (11) over the submaxillary gland. 12, 13, 14, 15 and 16, Nerves that have their origin in the cervical portion of the spinal cord. They are distributed to the muscles and skin of the neck and back of the head. The nerves 1, 2, 3, 5, 7 and 9 are branches of the seventh pair, and are distributed over the face in a radiated direction, which constitutes the pes anserinus. The nerves 4, 6, 8 are branches of the fifth pair. The branches of the fifth, seventh and cervical nerves communicate with each other.

There is supposed to be a cause which must precede an effect, and all the suffering which is known by the term tooth-ache, must have a cause, and a way by which the effects of that cause is communicated to the system at large. It is admitted that the teeth are endowed with sensibility which must depend on the presence of a nerve, as all sensation must proceed from nervous agency. The nerves which impart sensation to the teeth, must have connections with other nerves. What these nervous connections are, and how they are related to the system, we shall briefly describe.

There are two principal classes of nerves; one is called the sensor, because all sensation depends upon their agency. The other is the motor, which, acting in unison with the muscles, and being under the control of the mind or will, produce the movements or motions which are common to animate nature. Thus, when we move our jaws in masticating our food, or, when we walk or perform any act where the muscles are called into play, it is through the agency of the motor nerves on the muscles.

The sensor nerves are of a different class. All sensation is produced by them. It is by these nerves we are informed of any injury which the



body may have sustained—the location of that injury and its extent. The mind is made acquainted with disease likewise, that may exist in any part of the system. This may be fully illustrated by a diseased tooth.

The teeth are supplied with nervous sensibility by what are styled, by anatomists, the fifth pair, or Trigemini; they have their origin in the brain, and its connecting parts; where they are first distinctly noticed, is by the side of the Pons Varolie, near its connection with the Crura Cerebelli; it has likewise connections with the spinal cord, and forms its connection with the cranium and spine; it is called the cranial, spinal nerve. It comes forward and forms a ganglion or knot which rests on the petrous portion of the Temporal bone; this ganglion or knot is composed of eighty or a hundred filaments of nerves; from this ganglion is sent three nerves on either side of the face or head, namely, the Ophthalmic, the superior Maxillary and the inferior Maxillary nerves, from which are distributed numerous minor nerves. The Ophthalmic is a sensor nerve, as well as the Superior Maxillary; the Inferior Maxillary have the two nervous principles embodied in them, they being both sensor and motor. The Superior and Inferior Maxillary

nerves supply the teeth, the teeth forming connections with these nerves by little branches which enter the fang or root of the tooth, each fang having a nerve connected with it, so that those teeth having three fangs have three nerves, and so on.

Having pointed out the origin of the nerves that supply the teeth, and shown their connections with them, it will require but very little reflection on the part of the reader to account for the very great suffering of those who have been or may be afflicted with the tooth-ache, being connected, as they are, with the brain, face and spine.

The Superior Maxillary nerve, the nerve that supplies the teeth of the upper jaw, likewise the cheek and the upper lip, emerges from an opening just beneath the eye, passing directly across the floor of the orbit. The branches which supply the superior molar teeth, are called the posterior dental nerves; one branch supplies the gums.

The very delicate nervous sensibility of all the parts that relate to the cranium, face, and all their connections, will not be a matter of surprise, when we state that there are nine pairs of nerves that have their origin in the brain,

which supply the head and surrounding parts, and which, by their connections, have an influence on all parts of the body.

There is one characteristic of the motor nerves of the face, that gives it great interest. All who are blessed with vision, realize how much is expressed in the changing countenance, from the more marked expression caused by laughter or crying, to the most minute changes that are being traced on this tablet of the human soul, the face. Here is an index which it is almost impossible to disguise; the workings of the soul will here be seen, and from its changes, most of the prominent traits of the individual character may be read. All these varied expressions are produced by the muscles put in play by the motor nerves.

The foregoing brief remarks may lead the reader to feel a greater interest in the subject, which will well repay any attention or research that may be expended upon it.

## CHAPTER V.

## FIRST DENTITION.

“ The first dentition asks our earliest care,  
For oft obstructed nature, laboring there,  
Demands assistance of experienced art,  
And seeks from science her appointed part.  
Perhaps ere yet the infant tongue can tell  
The seat of anguish that it knows too well,  
Some struggling tooth, just bursting into day,  
Obtuse and vigorous, urges on its way,  
While inflammation, pain, and bitter cries,  
And flooding tears, in sad succession rise.”

If there be any one portion of dental physiology that has greater claims over another, that portion must be first dentition. The slender, and very uncertain tenure that binds the tender being to life, is easily interrupted, and cut short by the most trifling or adverse circumstance. The influence of any morbid or unhealthy action, at this critical time of life, is more difficult to be overcome. The care to be exercised by parent

or nurse in the management of infantile existence, is necessarily very arduous. It is at this time that good judgment and thorough knowledge of the wants and necessities of the infant should be possessed by those to whose care they may be entrusted. We design to treat, to some extent, of the duties referred to.

Of the deaths that take place among children, two thirds of the aggregate number are under two years of age. The statistics of the deaths of children in our large cities often strike us with astonishment, and we are led to enquire the cause.

It has been stated that the deaths among children from teething, in the city of London, for one year, reached the very large number of *seven thousand two hundred and sixty-one*, (7,261,) all under two years of age.

There are certain marked periods in human existence during which the physical nature of man undergoes important changes. Prof. Baums remarks, that "the life of man is distinguished by certain periods, during which, the body acquires a new degree of perfection, by the development of its organs, and of the functions which belong to them. These periods are characterized by certain phenomena, which depend

upon the nature of the developing organ, and the excellence of the functions that pertain to it. When regular, they result in real increase and perfection; when irregular, they become the cause of suffering and even of death. When regular, they show that nature exercises free command over the body she has formed, for upon this they depend; when irregular, they manifest errors of this same nature, counteracted by our constitution and by other physical causes under the influence of which we live.

“The acquisition of the Teeth is the first of these developments. It takes place when the body is excessively excitable, when pain produces severe effects, and when the irritation consequent on the local development, largely influences the rest of the system. Dentition is, therefore, a very important epoch in the history of man, and it is extremely useful to examine it in all its different aspects. In it may often be found the cause of the death of a great number of infants, and the foundation of certain serious disorders which are subsequently developed, or which remain for life as taints in the constitution.”

The most fruitful causes of the great amount of suffering during infantile life, result, in a great

degree, first, from an imperfect innate constitution, or from some hereditary taint, and, in the second place, from mismanagement. The last specified reason has more than an ordinary share to account for. Different temperaments and constitutions in the infant as well as in those of more advanced life, require different management in their diet as well as in their bathing. On these two points in Physiology, in a great measure, is based the great blessing of health.

Rosan, who has paid much attention to the diseases of children, has given us more exact notions of the common causes of deficient dentition. "When," he says, "a child has come to its full term, and is born of healthy parents, and when, besides, the mother has restrained her passion during a certain period, has preserved a tranquil mind, and avoided excesses in aliment—and when, moreover, the child has had from its birth good milk—the teeth are always cut easily enough, and with little pain. The more the circumstances vary from this, the more difficult is the dentition, and the more danger may be apprehended to the life of the child." "A father," says the same celebrated Swedish physician, in another place, "who is infirm—a mother who gives way to her passions, or who has committed im-

proprieties in eating during a certain period, or a nurse whose milk is of a bad quality—these are the causes of difficult dentition, and frequently through it, of the death of the child.”

Prof. Baums remarks, that, “thus the obstacles that impede the organization and eruption of the teeth—the accidents that surround and mark the epoch of dentition, are almost all foreign to the infant.”

The nervous connections of the teeth and gums are such, that they sympathize with different and important portions of the system, especially the viscera of the chest and abdomen; as the heart and lungs, &c., the stomach and digestive organs. The gums have important vascular connections likewise.

“From these anatomical truths,” says Prof. Baums, “we must infer that when the gums and the *periosteum*, (the lining membrane of the socket in which the tooth grows) are affected with irritation, rupture or inflammation, the disorders incident thereto may readily be propagated to those parts of the body which have direct relations to them, and there produce serious consequences, and this the more easily, in proportion as the parts are predisposed to disease by extreme mobility, or constitutional activity.”



Proper management or nursing, and, in fact, all correct treatment of the infant, must be based on its constitutional indications; by which we mean its natural bodily condition; for instance, the warm or tepid bath is better suited to infants whose too active constitutions suffer through heat and too great bodily activity, while the cold bath is proper for those who are endowed with a contrary constitution.

\* "There was a time when, by the advice of Jean Jacques, (Rousseau,) the rearing of children was conducted upon a plan, not *hard* but *cold*. The children, almost from birth, were scantily clothed; they were washed with cold water; they were plunged in buckets of the same—and physicians have approved these proceedings. Ranlin says that he saw children who were scantily clothed, and accustomed to cold water, become strong and robust. He says that the greater part of them went almost naked during the most extreme of winter, without appearing to suffer from the exposure. A great number of good medical writers recommend these means, as the only ones that can counteract excess of (constitutional activity,) rickets, and difficult dentition.

\* Prof. Baums on First Dentition.

“All that I have said about the utility of the cold bath and hardy life, for children of too great mobility, to whom it assures an easy and safe dentition, does not prevent me from speaking in the highest terms of the warm bath. Immersion in a bath of this temperature brings the body in contact with the caloric of the water—and we know how stimulating heat is—and here it animates the functions. Hence it is useful to children who languish only from debility, and who are feeble merely from a want of a sufficient quantity of the general principal of heat and life. Persons who speak from theory, are led at first to exclude the warm bath, on account of the vulgar prejudices against its action. They say, “the warm bath relaxes and weakens,” when it is incontestible that it animates, restores and sustains the strength. Thus we may produce the same effects from opposite means. Nevertheless, I do think that it is altogether indifferent whether we use the warm bath or the cold. One cannot long experiment upon this subject without discovering that the warm bath acts more promptly, and that the effects of the cold are more enduring; that the warm suits better in great debility, the cold in general relaxation of a less degree, and as nothing of the kind is absolutely good or bad, circumstances only must decide between them.

“In general, if immediately after a cold bath the infant remains pale and more or less benumbed, and if any of its limbs appear contracted after the child has been dressed, then not only will the cold do no good, but it must be abandoned for fear of harm. It is then that the warm bath must be prepared.”

At the conclusion of a treatise on fevers, by Huxham, we find the following remarks in an essay on first dentition: “Dentition,” he says, “is considered, with reason, to be dangerous to infants, but it is not so in the order of nature. Every day’s experience prove this; for if dentition were a malady, we could not enjoy good health until twenty-two years of age, since we are getting teeth the greater part of that time. Although this operation of nature be accompanied with fever, convulsions, and many other troublesome phenomena, yet we find so many cases of exception, that it would be improper to consider these accidents natural, and to hide the fact that they proceed from a too great fulness, or from the corruption of humors put in motion by the pain of dentition. It is true that the eruption of the teeth is scarcely ever unattended with pain and indeed a little fever, but when the blood and the humors are neither acrid nor too abun-

dant, these accidents are so inconsiderable that they gradually disappear without any consequences.

“Bad air, motion and repose, sleep and wakefulness, even the secretions and retentions, exercise less decided and pernicious influence upon the health of infants, than do aliments and regimen.

“I pass to another kind of proof. Robert Bland, in England, Niles Dalberg, in Sweden, and M. Raymond, in France, from tables of mortality prepared with care, have proved from the defect of good aliment and suitable clothing, woman of the indigent class have great difficulty in saving a small proportion of their infants. We know the striking statement made by Dr. Harris, of the prodigious number of nurslings that were provided for in a parish a dozen miles from London, in a healthy and airy place, of whom all but three died within a year, through the fault of mercenary nurses. The learned M. Gilbert has very carefully observed, children nourished with bad aliment and without proper regulations as to quantity of food, almost all perished before they were nine months old.

In these and similar facts, do we not see strikingly exemplified the pernicious influence of

bad regimen on the period of dentition, and a respective augmentation of mortality during this process, among badly nourished children?"

We have given several extracts, already, from Prof. Baums, on first dentition; the value of the suggestions contained in this treatise are such as to commend themselves to the careful attention of all persons having the care of infants.

The last chapter of Prof. Baum's treatise, entitled "Of errors committed in the mode of raising infants, considered as the chief cause of difficult dentition," is worthy a careful perusal; it treats on the food, nursing, and the persons employed as nurses for the infant. Some of the most important parts of this chapter we present to the reader.

"The very important subject of this chapter has direct reference to dentition, since an infant well made at birth, will acquire serious vices of constitution, if it be raised in a manner unsuited to its wants, and contrary to the end of its organization.

"The first, and undoubtedly the most dangerous of these errors, is in giving the very young infant milk of a bad quality. If the matter which is to repair and sustain the parts is acid and vitiated, these parts receive in the very

agents of nutrition the elements of destruction.”

With milk of this kind the children acquire \*sthenic mobility. It is not to medicine that we must go for relief in this case, but to the fresh and properly prepared milk; such as that which after the accouchment fills the breast of the mother. This passes by gentle gradations, from a degree of tenuity to a consistence almost creamy; for nature has wisely regulated the aliment she destines for the infant, according to its capabilities of digestion. Unhappily, all mothers cannot nurse their children. This is restricted to healthy and vigorous women, and such should blush not to nourish their children. They who do so, merit the humiliation endured by the mother of the natural brother of Gracchus; this young Roman, when he returned from a military expedition, brought to his nurse more magnificent presents than he did to her who had given him birth. ‘My mother,’ he said, ‘you carried me nine months in your bosom, but as soon as you saw me you abandoned me. My nurse received me gladly; she carried me in her arms and nourished me with her milk for three years—all she did was voluntarily done. You carried me in your

\* Attended with a preternatural and morbid increase of vital energy, and strength of action in the heart and arteries.

bosom and nourished me from natural necessity. I feel more indebted to my nurse than to you, and I wished to show this by the difference of my presents.'

"It is not to be supposed that it is always impossible to have a good nurse. Experience proves the contrary ; but to fulfil all the functions of a nurse, it is necessary for the woman to have that maternal tenderness that would expose her own life to protect that of the child. She must also have that maternal love that will cause her to control her diet and her appetite ; she must have that maternal patience that will fit her to watch the cradle and to guard its child from pain and disease. Are these qualities to be found in many nurses ? This is not the place to enumerate the causes of depopulation which are found in the vices, prejudices and blindness of mercenary nurses ; causes which Dr. Gilbert has thoroughly analyzed ; nor to insist upon the different considerations that make nursing by the mother a sacred as well as a salutary obligation. I will only say that in preferring the milk of a stranger, there is a risk in giving bad nourishment to the child ; either because it may be less suitable to its constitution, or because of its too great or too little tenuity. Milk too thick, will

produce a part of the effects of undigested aliment; milk too serous for a robust child, may produce too great mobility, after having caused a degree of decline and inanimation.

“ To be of good quality, milk ought not only to be furnished by an excellent nurse, but her regimen should be salutary, for the milk retains the qualities of the aliment made use of.

“ An excellent nurse should be of good morals, and indeed of fine physical qualities. Her age ought to be between twenty and thirty, and the color of her skin natural. Her eyes should be lively and animated; her hair and her eyebrows light colored; her lips red, her teeth sound and good, her gums hard and well colored; she should have sweet breath: ‘As to the other qualities of a good nurse, it is necessary that the hereditary diseases of her family, (if any) should be inquired into. The nurse should be perfectly free from cutaneous eruptions. It must be ascertained that she has not already nursed children with eruptive disorders. She should not be passionate, rude, capricious, nor a tippler of intoxicating drinks. Inquiries into these matters cannot be too minute.’

“ ‘ It does not suffice that the milk be of good quality—it is also necessary that the nurse



shall permit the infant to take it *only when it is required*. Unfortunately, women are persuaded, and not without a show of reason, that an infant ought to nurse the more frequently in proportion to its growth, because of the great rapidity of nutrition, and the abundance of the excretions. On this account the breast is given them at very short intervals. Gorged with milk, the infant rejects it without effort, or in a fit of hiccough; but nurses regard these salutary vomitings as a loss of aliment, which must be repaired; and they again offer the breast. This course is continued, the stomach becomes accustomed to throwing off its contents or is enfeebled, the digestive powers are weakened—hence acid or glairy matters form and multiply in the mesenteric organs, and the health of the child is either destroyed or prepared for destruction at the period of dentition.”

All wise and experienced physicians have pointed out the effects of this sort of dietetic error. Mr. Gilbert has treated this subject with great truth. According to him, nurses almost always err through ignorance or prejudice, with regard to the manner of nursing infants. Many of them, persuaded that good milk can never do any harm, make their children nurse almost constantly. Now all physicians agree that, at all pe-

riods of life, there ought to be a proper interval observed between the times of eating ; it is evident that if the stomach be filled with new aliment while it is engaged in digesting that which has already been taken, the preparation of the food for assimilation will be imperfectly performed ; the chyle will be crude and of bad quality. Infants are more exposed than adults to the disorders that this mistake occasions. If they are made to nurse before the milk already taken be digested, the new curd that is formed hinders the digesting of the old. Hence arise wind and colics. The milk sours ; occasions convulsions, obstructions, marasmus,\* evils common to badly nourished children, and which make their ultimate assaults during dentition, and often obstruct this process with obstacles that are not overcome.

“ The consequence of the morbid results of which we have just spoken is, that it is necessary to begin early to form a good constitution for the child, and to procure for it, by means of a good regimen, a dentition exempt from unnecessary inconveniences. On this account a child should, from its very birth, be regulated both as to the quantity of milk it takes, and the number of

\* Dissertation on the depopulation caused by mercenary nurses, p. 316.

times it is permitted to take the breast. I have known very respectable women, of high rank, who, while nursing their own children at a time when such a course was not common in fashionable circles, had the courage to accustom their infants to a certain number of nursings in the twenty-four hours, and their success induced many good mothers to imitate them.

When an infant has taken a sufficient quantity of milk, and yet cries, it is not from hunger but from some other cause. Probably it is from wind, which may be dissipated by the application of a warm cloth to the bowels, or by a gentle friction with a fomentation of anniseed water, chamomile, or orange flowers. As long as it cries it should not, as a general rule, be permitted to take the breast."

The state of the child's health, the strength of its constitution, and the quantity of its dejections, ought to decide the quantity of milk it may be permitted to take, and the number of times of nursing it. When the breast is full, hard, and a little painful, nurses are in the habit of pressing infants by putting them upon the back to empty it. This ought never to be done. It is better that a good nurse should lose her milk from her nipples than incommode her infant. This only

happens when the child is young. As it grows older, it becomes eager to empty the breast, and every nurse knows by this sign when the child thrives and when it takes aliment enough.

The abuse which women make of their milk, the idea, very often false, that milk alone is not sufficient for the nourishment of the child, and the rapid growth of the infant have led nurses to give, even to very young children, additional food; and this custom has not been discarded. Nurses are very fond of routine; they have local customs, and the councils of old women, grand-mammas and duenoras exercise a dangerous despotism over the minds of the young mothers and inexperienced nurses.

“Unhappily, such aliment as they use, enfeeble the tissues, and give to the children an appearance of enbonpoint and health. Nurses who take pride in having their children fat and sleek, confirm themselves in the propriety of the course on which we are commenting. When serious diseases occur, they blame dentition, which is a natural process; worms, which do not exist; and fever, which is but the effect of bad nourishment. Death carries off the victim, and the next infant that falls into the hands of the nurse is ordinarily no better treated.

“ We can give no more countenance to those nurses who wish, as they say, to accustom their children to eat everything, and to make them ‘ a good stomach,’ while they have scarcely got their first incisor teeth. For this purpose they give them bread and meat, which they (the nurses) have somewhat masticated ; in fact any thing of which they eat themselves. They are not even sparing of those aliments which generally disagree with infants at the breast. Thus the stomach, so far from becoming strong, grows feeble, the disorder of the bowels increase instead of being remedied, the children die instead of living healthy and vigorous.”

It is conceded, we believe, by writers on the subject we have been discussing, that a want of proper attention to the wants of infantile existence is, in the majority of cases, the cause of so much death among this class. Whether this inattention arises from a want of proper knowledge, or absolute heedlessness on the part of those to whose care they may, by Providence, have been entrusted, cannot always be determined ; we are led to believe, however, that in most cases the former reason would predominate, namely, want of proper knowledge. Innate love of offspring exists in almost all animate beings ;

there is a solicitude exhibited by the most ferocious as well as by the most harmless of animal creation. There is often, no doubt, a laxness exhibited on the part of man in this respect, but charity would lead us to believe that such cases are not by any means numerous.

The remarks which follow, on this subject, written we believe by a mother, are worthy of attention :

“Children who are born of weak and nervous parents, usually suffer most from their teeth, while those who inherit a sound, hardy constitution often pass through the whole process with but little suffering.”

Our first aim, then, should be to strengthen the system of the child by daily contact with fresh air, scrupulous cleanliness, and the daily application of cold water to the whole body, accompanied with the gentle friction of a sponge. The head, particularly, should often be washed with cold water. There is no danger of a child's taking cold if accustomed to this treatment from the first, as it should be. In fact it is one of the best preventives *against taking cold*.

“In diet, every thing of a stimulating nature should be avoided. If the child is obliged to have other food than that furnished by the mother, it should be such as most resembles it.

“We cannot here avoid speaking of that most pernicious habit of many persons who put in the mouths of tender infants, as soon as they can swallow, any and every unwholesome, indigestible stuff, which they are accustomed to impose on their own stomachs. How often have we seen mothers, as they held their infants in their arms at the table, ply them not only with tea and coffee, but, as they most foolishly express it, ‘with whatever they loved themselves,’ whether strong tea, pickles, or greasy soup. Such ignorance in parents is inexcusable; and if mothers will not make themselves acquainted with the physical and moral natures of the little beings entrusted to their guardianship, they deserve all the trouble and anxiety arising from their children’s fretfulness and sickness so often induced by such mismanagement. Instead of merely consoling them under the afflictive dispensations of Providence, which removes their children from their care, we feel inclined to say to them, according to the spirit and letter of the Bible, “you have reaped as you have sown.”

“The practice of keeping a child for weeks and months confined in a warm, close room, buried beneath a mass of bed clothes, strata after strata of quilts and blankets, covetlets and

spreads, until the poor thing is almost suffocated ; and, if it has to be carried from one room to another, so enveloping it in its superabundant swaddling-cloths that it is really quite a complicated and protracted process to find the "dear little thing," thus inhumanly smothered to prevent it's getting cold, *is the very way to render the child susceptible to cold.* It is the very way to make them delicate and feeble, and doubly liable to all the diseases incident to childhood, and to none more than to those which accompany teething, which, though not itself a disease, frequently affects the whole system, and, by the irritation kept up, calls out all the morbid influences that otherwise might have been dormant. The same precaution and care are therefore necessary, as if it were in itself, and necessarily, a disease."

The great irritation which is experienced by the infant during this period, is caused by the pressure of the teeth upon the gums, in the effort of nature to bring these little organs to the surface ; much depends upon the constitution and general health of the child. If the innate constitution be good, and the *health* be guarded, the eruption of the temporary teeth cause comparatively little trouble.



“The pressure,” Dr. Good observes, “is not uniformly exerted through the whole course of teething, but is divided into distinct periods or stages, as though the vital or instinctive principle, which is what we mean by nature, becoming exhausted by a certain extent of action, requires rest and a state of intermission.

“The first, or active stage of teething, is about the third or fourth month of infancy, and constitutes what is called breeding the teeth, or, conversion of the pulpy rudiments buried in the gums, and formed during foetal life, into a solid material, which at the same time shoots downward, and gives to every tooth a neck or fang.”

Children, during the time of teething, usually suffer much. They are, at intervals, very restless and irritable. Nature, by a wise provision, has thus arranged it, for, should this great nervous irritation be unremitting in its action, convulsions would be the result, and the life of the child be more precarious. These paroxysms usually last about three hours, after which nature regains its exhausted energies.

It is not always the case that the irritation is local; were it, the distress caused by cutting the teeth would subside on their emergence through the gums. The effects are often of a general

character, causing great disturbance in the functional operations of the system, thereby inducing disorders or derangements of a variety of forms.

Diarrhœa is one that frequently attends teething, and is often fatal; besides, there are various cutaneous eruptions which appear on different parts of the body, as red gum, &c. There is nothing serious, generally, in the character of these eruptions, but are looked upon as being a substitute for some more severe form of disease.

There are other symptoms which usually accompany teething; spasms, particularly in the muscles of the face, cough, and not unfrequently the diarrhœa will become so excessive as to cause emaciation and sometimes convulsions, which terminate by death to the little patient.

From the preceding remarks on first dentition, we may draw the following practical hints. That it is of great importance to attend to the general health of the child, and endeavor as much as possible to strengthen and invigorate the whole body. As the innate constitution of the child may be feeble, the most proper and rational means to be used will be, bathing *every morning*, either in tepid or cold water, as may best agree with its comfort; guarding the stomach from any improper aliment; not allowing it to sip cof-

fee or tea, as these drinks are classed in medicine as nervous stimulants; keeping the temperature of the body at its proper standard; not smothering the child by an excessive quantity of clothing, and by avoiding an improper exposure by the want of sufficient clothing, as is too often the case, especially where the taste for dress, of the parent, is consulted, rather than the health of the child. As fresh or pure air is important to health, none, children or infants, should be debarred from it, and kept in a confined and unventilated apartment. Pure air, next to proper food, is essential to good health. These few hints, if properly regarded, may prove beneficial to parent and child.

## CHAPTER VI.

## CARE OF THE FIRST SET OF TEETH.

The temporary teeth usually suffer much from neglect. Parents, or those having the care of children, being aware that the first teeth are but *temporary*, give but little attention to them. A great error in regard to this subject is thus practiced; the remark commonly is: "they are the child's first teeth, and are in a bad condition I know, but it will soon have others stronger and better."

Parents are not so much in fault, considering that, as a general rule, there has been but little or no advice or information placed before them on this subject. I doubt not, had the case been otherwise, the care and attention of *mothers* would not have been wanting in a case where so much of the future health, happiness and good looks of their children were involved. Man is im-

provident often, but in this case he is almost unpardonable.

For the information of our readers we think we cannot do them greater justice than in placing before them the more mature judgment and advice of such distinguished and able persons as Professor C. A. Harris, of Baltimore, Dr. E. Parmley, of New York, and L. S. Parmley, of New Orleans. These quotations, I design, shall be full, as the importance of the subject demands it.

Professor Harris writes as follows on this subject :

“ Many suppose that, inasmuch as the temporary teeth are intended to subserve the wants of the body only for a short time, and are then to be succeeded by a better and stronger set, it is of little consequence whether they remain until they are removed by the operations of the economy, to give place to others, or are lost a year or two earlier. But this is a great error ; and it is one that has been productive of much mischief.

“ By the decay of a temporary tooth its living membrane is often exposed, and, in consequence, becomes inflamed, giving rise to pain and oftentimes to alveolar abscess and necroses, and exfoliation of the alveolar process, and sometimes to

considerable portions of the jaw bone. The alveolar cell and crowns of the permanent teeth are in this way sometimes destroyed. This, however, does not often happen, but the latter always suffer injury from disease in the sockets of the temporary teeth, for it is impossible for a morbid action to exist here for any great length of time, without impairing the functions of the parts concerned in the production of the secondary teeth, which are situated immediately behind and beneath the root of the primary.

“ Inflammation of the alveolar dental periosteum of a temporary tooth, and the gums, may be communicating a morbid heat to the permanent ones behind or beneath it, and be productive of much injury to the new teeth. It may interrupt or impair the process of ossification, by causing the calcarious ingredients that enter into the composition of these organs to be secreted in too small quantity; and it may also cause the fluid of the sac, in the midst of which the new tooth is situated, to become acrid or acidulated, and to corrode the enamel; but this last effect is produced more frequently by the general than the local disease.

“ The decay and premature loss of the temporary teeth constitutes one of the most frequent

causes of irregularity in the arrangement of the permanent, and, if for no other reason than the prevention of this, their preservation, if possible, should be secured until they are removed by the economy to give place to their successors.

“ Besides the local effects which are produced in the temporary teeth, the functional operations of the other parts, and sometimes of the whole system, become, in consequence, more or less deranged. It is well known that an unhealthy condition of the permanent teeth often give rise to general or constitutional disease, and the system at this young and tender age is certainly more susceptible to morbid impressions than it is after all the parts of the body have acquired the full vigor of maturity.

“ Most of the diseases that attack the temporary teeth are the result of inattention to their cleanliness. The particles of food and other extraneous matter that lodge between the teeth and interstices, and along the edges of the gums, if permitted to remain, soon undergo a chemical decomposition, and become a source of irritation to the latter, vitiating the secretions of the mouth, and rendering them prejudicial to the former.

“ The temporary teeth, from these causes, are involved in caries, subjecting the little sufferer

to the most tormenting pain, and depriving it of the first set long before the second has arrived. Some teeth are more susceptible to the action of chemical agents than others, and consequently more liable to disease. Teeth that are of a hard and firm texture are not easily affected, but those that are soft and chalky are readily acted on by the fluids of the mouth, when in an improper or vitiated condition, and the greatest care and attention is necessary to preserve them for the short period their presence is required.

“As the decay of the teeth is dependant upon the presence of vitiated, acrid and corrosive matter, the means of its prevention are obvious. It consists in frequent and thorough cleanliness, which, to be effectual, should be commenced as soon as the first teeth appear. Dr. L. S. Parmley, a dentist of upwards of thirty years' experience, and a close and attentive observer, recommends the rubbing of the gums of the infant, from birth to the appearance of all the teeth, with the finger of the mother or nurse, for the purpose of giving them a firmer texture. He recommends the cleansing of the first teeth as soon as they appear, with a brush and water, and with wax floss silk morning and evening, and after each meal. The latter he directs to be passed up and



down between them and the free edges of the gums, for the purpose of removing all accumulations of impure or vitiated matter."

If, notwithstanding the regular and thorough use of these means, stains and discolorings should come upon the teeth near the gums, as they often do, Dr. Parmley recommends for their removal, the daily employment of an argillacious tooth polisher, so formed as to be readily applied to the surfaces of the teeth. Powders are generally employed for the accomplishment of this object, but they, on many accounts, are objectionable, and should never be used when the gums are inflamed or swollen, for, when in this condition, they get between them and the necks of the teeth, increasing the irritation, and thus, by rendering the secretions of the mouth still vitiated, and viscid, hasten the destruction of the teeth.

If parents and guardians would pay more attention to this subject, the services of the dentist would be much less frequently required. The importance of cleanliness, and other attention to the teeth of children, cannot be too strongly urged, as, by it, a vast amount of disease and suffering in after life may be avoided.

The following appropriate remarks, although not applying to the teeth of first dentition, are

quoted from Dr. Eleazer Parmley's notes to Dr. Brown's *Dentologia*. The high reputation of the author as a practitioner, and his extensive experience, entitles him to more than ordinary respect. He says:

“This is a subject which demands the attention of parents and those who are interested with the care of children. It should be the first object of every person so situated, to habituate children to clean their teeth at least twice a day, and when this practice has been once adopted, it will be continued as a matter of course. Besides this, from the age of six to twelve years in particular, a dentist should be consulted from three to four times a year, and at later periods once or twice, for the purpose of examining the teeth, and, by proper means, removing all such causes as may produce disease, or result in any mischief to the teeth.”

In London and Paris, and I believe in all the larger cities of Europe, the principal academies and boarding schools are regularly attended by dentists for the purpose of having the children's teeth examined, and performing such operations as they may require when necessary. I should be glad to see this plan more universally adopted in our cities, for I am convinced that the ad-

vantages arising from it are incalculable ; for, if proper care and attention be not paid during the time the teeth are shedding, a countenance however naturally beautiful may, in consequence, be totally disfigured ; and it frequently happens that an unpleasing countenance, although united to an amiable mind, produces a dislike that is not easily overcome. "It is, therefore," says Mr. Murphy, "a duty incumbent on parents and those who have the care and education of youth, while they do justice to their minds, not to overlook their personal advantages."

"As soon as the teeth of a child are completed, they should be brushed twice at least, once a day with a soft brush and water. When children are thus familiarized to the healthy and necessary custom of brushing their teeth, the habit of doing it becomes so fixed that they find it ever afterwards absolutely essential to their comfort. In winter or in cold weather, the water used in washing the teeth should be tepid. It is quite unnecessary to use any powder to the first teeth of children."

The following remarks, by Dr. C. A. Harris, were designed particularly for the general reader, but from the character of the work in which they appear, it would be almost impossible to

give that extended publicity to them which their value demands. We therefore insert them in this place, hoping they may be carefully perused.

“The importance of a proper attention to the cleanliness of the teeth is, to the profession, too well known to need comment; the remark therefore which we design making upon the subject, will be intended more for the benefit of the general reader than for that of the practitioner of dentistry; and to him it would seem almost superfluous to speak particularly, were we not apprised of the great diversity of opinion that exists among those who have never made the diseases of these organs a matter of much inquiry.

By the educated and refined its utility is pretty generally acknowledged, yet there are a few, even among this description of persons, who regard it as decidedly injurious; and as an evidence of the correctness of their views, we are referred to individuals fifty, sixty, or perhaps seventy or eighty years of age, whose teeth are perfectly sound, that have never paid any attention to their cleanliness; and to others, not more than eighteen or twenty, that were known to be frequent and regular in its observance, with deplorably bad ones. To a person unacquainted with the differences in the liability of the teeth of dif-

ferent individuals to become diseased, and the causes that produce them, this might seem to be a very conclusive argument, but to one having a knowledge of them, it only proves that, in proportion as these organs are hard or soft, that their power or capability of resisting morbid impressions is increased or diminished. Hence, teeth that are hard rarely decay, whereas those that are soft decay from the most trivial causes ; and thus it is that some occasionally retain them to an advanced period of life, while others, and that too very frequently, lose them before they arrive at anything like what is usually denominated middle age.

“ It often happens, however, that persons who are possessed of the hardest kind of teeth lose them early in life by the destruction of the means of their support ; and it is worthy of remark that the loss of the teeth in this way is generally confined to those who pay little or no attention to their cleanliness. With those who are, and have been from early childhood, in the frequent and regular observance of this, such an occurrence rarely, if ever, happens ; and the reason is obvious. By cleaning the teeth two or three times a day the formation of tartar is not only prevented, but such particles of food and other extrane-

ous matter as lodge about and adhere to them, and which, when permitted to remain, soon become putrid, vitiating the juices of the mouth, and causing them to irritate and inflame the gums, and in consequence, to be absorbed, together with the alveolar, are *also* removed. That there is a greater tendency in some than others to disease of the gums, we do not deny, but this, by proper care and attention, might, we believe, in almost every instance, be counteracted. Our opinion therefore is, that the gums, if the teeth be kept *perfectly* clean, seldom become spongy or recede from their necks, and that teeth that are situated in healthy gums, rarely, if ever, loosen much in their sockets. If this, then, be true—and that it is we are firmly persuaded—the importance of a strict observance of the purifying of the mouth cannot, if for no other purpose than the keeping the gums healthy, and the prevention of a consequent loosening of the teeth, be too strongly urged.”

If it were possible to keep the teeth perfectly clean, we believe they would never decay, but this, literally speaking, is hardly practicable. The enamel on the sides of the teeth that come in contact with each other, is often fractured, and with these fractures the indentations on the

grinding surfaces of the bicuspides and molars, a lodgment is afforded to small particles of extraneous matter. These particles uniting with the secretions of the mouth cannot, by any of the ordinary purifying means, be reached, and remaining in the fractures until vitiated or putrid, exercise on the parts in which they are in contact, an exceeding hurtful influence. But were the cleaning of the teeth carried as far as practicable, they would be much less affected with disease; in fact we do not believe that there would be more than one decayed tooth where there are now half a dozen; and in this opinion we are convinced that every one whose attention has been much directed to the subject, will fully concur. It is one to which we have paid much attention, and the result of our observation is, that those who do, and have from early youth, attended to the cleaning of their teeth frequently, regularly and thoroughly, have far better ones than those who have neglected it, or who, if they have attended to it at all, have done it at irregular and uncertain intervals. This we have noticed in families, and in those parts where the members resembled each other in features, constitutional temperament, and in the shape, size, color and arrangement of their teeth, and our enquiries

in almost every instance, have tended to the confirmation of this opinion. Nor could it be otherwise, for upon the presence of putrid foreign matter, and vitiated mucus and saliva, does most of the diseases of these organs depend.

“The fact, then, that cleanliness of the teeth is essential to their health and preservation being established, a motive sufficiently strong for its observance is no longer wanting. But were this not the case, others, though comparatively of much less weight, but which, with many, have a greater influence, might be urged. Of these, the principal and only ones which we at this time propose to notice, are personal appearance and comfort, and upon them we shall offer but a few remarks.

“To a pleasing and agreeable expression of the countenance, a clean and healthy denture is of the greatest consequence. Even if the teeth lack that *perfect* regularity of arrangement which it is desirable that they should have, if they be but free from tartar, viscia mucus, and extraneous matter, their appearance will never be disagreeable; but if any of them, and more especially those occupying the anterior part of the mouth, be discolored or covered with a clammy mucus, or tartar, or any other kind of foreign matter, they



will rarely fail, however perfect all the other features of the face may be, to give to the countenance an unpleasing aspect.

“However scrupulously particular persons of either sex may be in regard to their dress, and although they may be decked with jewels, and sparkle with diamonds, if they at the same time be unmindful of a proper attention to the cleanliness of their teeth, they will fail to excite, in individuals of refined taste, those feelings of admiration which most desire to elicit, and which these organs, when the requisite care has been bestowed upon them, always awaken.

“And as essential as this is to personal appearance, it is equally so to comfort; and this, of itself, ought to be a sufficient inducement to the regular observance of such means as are necessary to its accomplishment; but so remiss are some persons in regard to it, that they allow their teeth to be covered with putrid, extraneous matter, and their breath, in consequence, to be so offensive as to render their proximity to another a source of the greatest annoyance. The frequent and thorough cleaning of these organs is of the greatest consequence to a pure breath, and those who neglect it breathe a more or less contaminated air, which, although it may not be obvious to

themselves, is very perceptible to others. It is also requisite to health, for in proportion as the teeth are unclean, especially of those persons who have delicate constitutions, is the appetite impaired, and the digestive organs weakened, and thus the capability of enjoying life is often diminished. But to enter into an explanation of the manner in which the health of the general system becomes affected by the want of a proper attention to the teeth, constitutes no part of our present purpose ; it may, however, from what has been said in regard to the effects upon the organs themselves, and upon the gums and alveolar process, be very readily inferred.

“ Having now shown the importance to the health and the preservation of the teeth, in keeping them constantly clean, we shall proceed to describe the manner by which it is effected, presuming if they, or the parts within which they are contained, be diseased, such means as are necessary to their restoration to health should be first resorted to. This done, all that usually will be required to keep them clean, will be a tooth pick, a brush and pure water. The first of these should be constructed from a goose quill, and should always be used immediately after eating, that such particles of food as may have gotten

between the teeth, may be removed before they shall have undergone a chemical change. As it regards the kind of brush most proper to be employed, there exists a considerable diversity of opinion ; some prefer a very hard one, others think a brush cannot be too soft, whilst others again give their preference to a medium one, and to this last our own is decidedly inclined. A tooth brush should be neither too hard nor *too* soft, but of these qualities the last is least objectionable, and, for a child, is perhaps preferable to any other. The bristles should be about one half of an inch in length, and be elastic, so they may be made to reach any part of the inequalities of the teeth, and with such a brush as this, and water, they should be thoroughly rubbed *several times a day*, say, for instance, in the morning immediately after getting up, and after every meal. This *purifying process should be commenced in early childhood*, and, if it should be carried to a sufficient extent, it will prevent the teeth from becoming stained or discolored, and keep the gums healthy.

“Dentifrices, such as powders, lotion, &c., are only called for in the treatment of diseases of the gums, therefore, of them we shall say nothing at present.”

We have deemed it advisable thus to quote, in this somewhat lengthy manner, from the writings of those who may be considered fathers in their profession. Their experience and observation for thirty years must have been such as to have given them a correct knowledge of the subject in question, therefore their advice and instructions are worthy of proper attention.

If the preceding remarks be properly consulted, and parents, or persons interested in the care of children, be influenced by the advice here furnished them, they, as suggested, will save their children much suffering, and as a consequence on early attention to the teeth, also many dentist's bills. We are aware that such a reformation might lessen the amount of practice in the profession. Justice to a community, however, demands, at the hands of the dental profession, some other tokens of faith than the actual operation; for there are no persons, however resolute, who do not shrink from the fossips, or excavator. Could we, by a word of advice to parents and others, so impress their minds with the importance of this subject as to induce them to give it the attention which it demands, we think a great good will have been done them.

## CHAPTER VII.

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### THE PERMANENT, OR SECOND SET OF TEETH.

There is comparatively but little trouble attending the eruption of the teeth of the second dentition. The whole body having become stronger, and better fitted to meet this change in nature, the process goes on in a natural and easy manner, in comparison to first dentition. As soon as the first teeth have made their appearance, the second set, or permanent, press forward to take their places, and in due time we see them appearing in regular order, one after the other, until the whole number has been completed.

The principal care attendant on second dentition is in regard to the uniformity of their appearance. The regular or irregular arrangement of the teeth will be treated in a subsequent chapter.

Much care should be taken during the eruption of these teeth to prevent, if possible, an irregular arrangement. The advice of a competent dentist might prove of great benefit at this period, as the permanent teeth are liable to be brought into wrong positions for the want of sufficient space, caused by too long retention of the temporary, or from a contraction of the bones, which is a consequent attendant on too early extraction of the first teeth. There are but twenty of the deciduous, or milk teeth, and this number, in the second set, is increased to thirty-two, there being twelve additional, namely, eight bicuspides and four molars. The reader will readily perceive that there is necessarily a larger space required for the second than for the first set, therefore great care is often requisite at the time of their eruption, that they appear in as uniform manner as possible.

The time of eruption of the second set of teeth usually, is as follows: First molars, from 5 to 6 years of age; central incisors from 6 to 8; lateral incisors from 7 to 9; 1st bicuspides, from 9 to 10; 2d bicuspides, 10 to 11½; cuspides, from 11 to 12; 2d molars, from 12 to 14; 3d molars, or wisdom teeth, from 18 to 20, and sometimes as late as thirty-five years.

As a general thing the teeth of the first dentition would be removed by a natural process, were proper care taken of them, so that they might be retained until the time of the eruption of the second set, but, owing to their constant neglect, they most commonly decay at a very early age, and, on account of the great suffering which they occasion, must be removed, and usually at a very improper time. The manner which nature has provided for their removal is well adapted to the end, and, if allowed its course, few teeth would be removed prematurely.

The roots or fangs of the temporary teeth are absorbed or destroyed by a carious body which is attached to their roots, which causes their gradual destruction in time, to meet the advancing or permanent set.

Prof. C. A. Harris writes as follows, on this subject :

“The manner of the destruction of the roots of the temporary teeth has been a subject of close and critical inquiry with me for several years, and, the more I have examined the subject, the more fully have I become convinced that it is the result of this fleshy tubercle upon them. And while its formation seems to be the contraction of the dental sack and its appendage, for the pur-

pose of effecting the eruption of the tooth, it is especially charged with the removal of everything that would obstruct its passage."

The preceding remarks on the destruction of the roots of temporary teeth are worthy of consideration, and should induce parents, and others interested in the care of children, to be more particular in their attentions to the condition of the teeth of children. For if the child's teeth can be removed by this natural process, a more uniform and healthy denture will be the result—an object well worthy the attention of all interested.



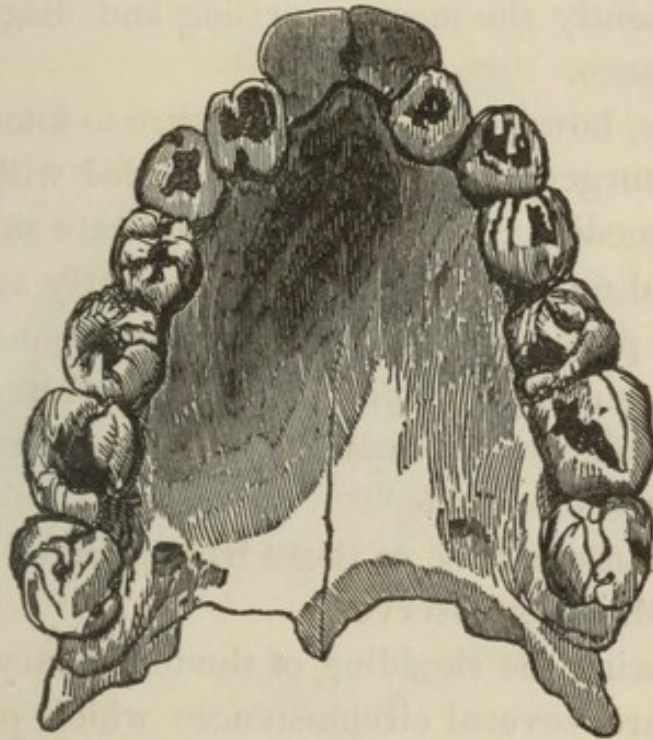
## CHAPTER VIII.

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### IRREGULARITY OF THE TEETH.

One great deformity in the human teeth is seen in their irregular arrangement. From the irregular position which the teeth often assume many serious disadvantages arise. They are met with, usually, in a variety of forms. Sometimes we see the superior central incisors standing back from their regular position in the arch, the inferior or those of the lower jaw overlapping; again we notice the superior lateral incisors in a similar position; sometimes they are situated far out of the arch, approaching the roof of the mouth; sometimes we see the central incisors standing at angles from forty-five to ninety degrees; again we see the bicuspidati, or those commonly called eye teeth, standing out of the arch so as to present a very unsightly appear-

ance, as well as causing great inconvenience to the individual, by interfering with the natural position of the lip. There are other forms of irregularity of the teeth which might be pointed out, but they all have the same tendency, namely, to disfigure the personal appearance. These irregularities often interfere with the free motion of the tongue, causing an imperfect articulation, and from their crowded position make them subject to earlier decay.



The above engraving represents a set of teeth in an irregular and crowded condition, the effects of which are marked by numerous decayed spots upon them. By proper attention being paid at the time of the eruption of the second set of teeth, such deformities and imperfections may be avoided.

Dr. Koecker remarks as follows on the subject :

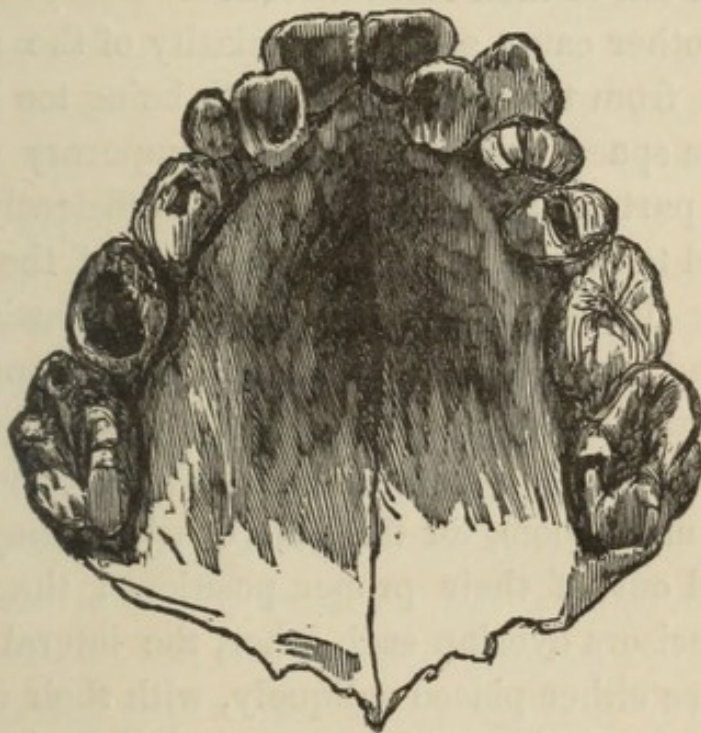
“Irregularity of the teeth is one of their chief predisposing causes of disease, and never fails, even in the most healthy constitutions, to destroy, sooner or later, the strongest and best set of teeth, unless properly attended to. It is thus not only a most powerful cause of destruction to the health and beauty of the teeth, but also to the regularity of the features of the face, always producing, though slowly, some irregularity, but not unfrequently the most surprising and disgusting appearance.

“It is, however, a great pleasure to know that dental surgery is abundantly provided with most sure remedies, and in the most delicate subjects, if placed under proper care at an early age, the greater portion of the teeth of the permanent set may invariably be preserved in perfect health and regularity, in common with their relative and contiguous parts.”

As to the causes of these irregularities of the teeth, Mr. Fox observes :

“During the shedding of the temporary teeth there are several circumstances which prevent the permanent teeth from acquiring a regular position, and often give rise to very great inequality in their arrangement. The most frequent

cause is a want of simultaneous action between the increase of the permanent teeth and the decrease of the temporary ones, by the absorption of their fangs. It rarely happens that so much of the fang of the temporary tooth is absorbed as to permit its removal by the efforts of the child, before the permanent tooth is ready to pass through. On this account the new teeth takes an improper direction, and generally comes through on the inside.



The above engraving is an exact copy of the teeth of a young Miss, as taken of her mouth by the author.

Irregularity of the permanent teeth is most commonly occasioned by the resistance made by the nearest temporary teeth ; this is always the case if the temporary teeth are small, and closely set ; for, as the permanent incisors are much larger than the temporary, they require more room, but as the space left by the shedding of the temporary teeth is too small for the regular position of the permanent, they are exposed to the pressure of the next tooth, and hence are turned out of their right direction.

Another cause of the irregularity of the teeth arises from the permanent teeth being too large for the space occupied by the temporary ones, those parts of the jaws not being sufficiently extended to permit a regular position of the new teeth. In this case the irregularity is considerable, and occasions great deformity in the appearance of the mouth. The incisors and cuspidati being much larger than those of the child, require more room, for the want of which they are turned out of their proper positions ; the central incisors overlap each other, the lateral incisors are either placed obliquely, with their edges turned forwards, or they are pushed back, and stand between and behind the central incisors and the cuspidati ; the cuspidati are projected,

occasioning the lips to stand out with considerable prominence, and the bicuspidæ are placed very irregularly.

It will be proper, in this place, to show the manner in which the jaw bones grow, (the under one being taken as an example,) and to point out the difference between the permanent and temporary teeth.

After the child has obtained all the temporary teeth, the jaw, in general, grows very little in the part which they occupy. In those children who are an exception to this rule, the temporary teeth become very much separated from each other, and these are the cases in which the shedding of the teeth is effected without the assistance of art. When the jaw of a child is compared with that of an adult, a very striking difference is observed; that of a child forms nearly the half of a circle, while that of an adult is the half of a long elipsis. This comparison clearly points to the part in which the jaw receives its greatest increase, between the second temporary molars and the coronoid process; and this lengthened part of the jaw is destined to be the situation of the permanent molars.

The growth of the jaw being nearly confined to the parts situated behind the temporary teeth,

where the permanent are placed, the anterior part of the jaw undergoes little more than alteration in form ; it adapts itself to the permanent teeth there situated, and scarcely receives any increase in size. When a child is about to shed its teeth, the first permanent molars come through the gums behind the temporary molars, and therefore the teeth which are situated anteriorly to the permanent molars can obtain no additional space.

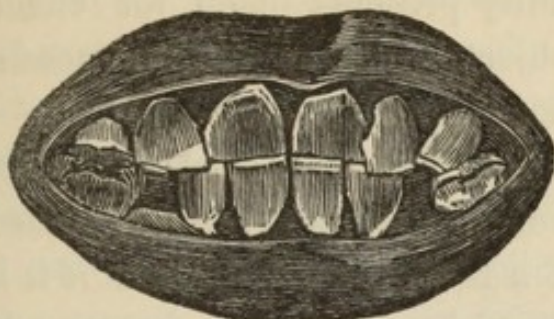
The four following engravings illustrate different deformities, caused by the irregular arrangement of the teeth.

No. 1.



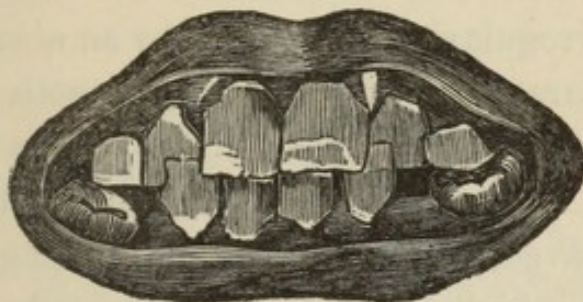
No. 1 presents the irregularity arising from one of the central incisors being situated within the line of the other teeth, the under teeth shutting over it.

No. 2.



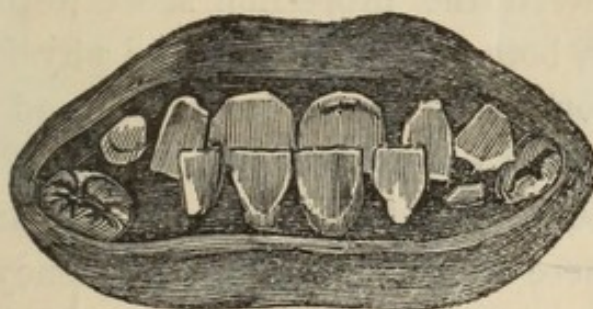
No. 2 presents both of the front teeth of the upper jaw crowded behind, the under teeth shutting over them.

No. 3.



No. 3 presents the two lateral incisors, or two small teeth of the upper jaw crowded behind, the lower teeth shutting over them.

No. 4.



No. 4 presents the four upper front teeth situated within the arch, the under teeth shutting over them.

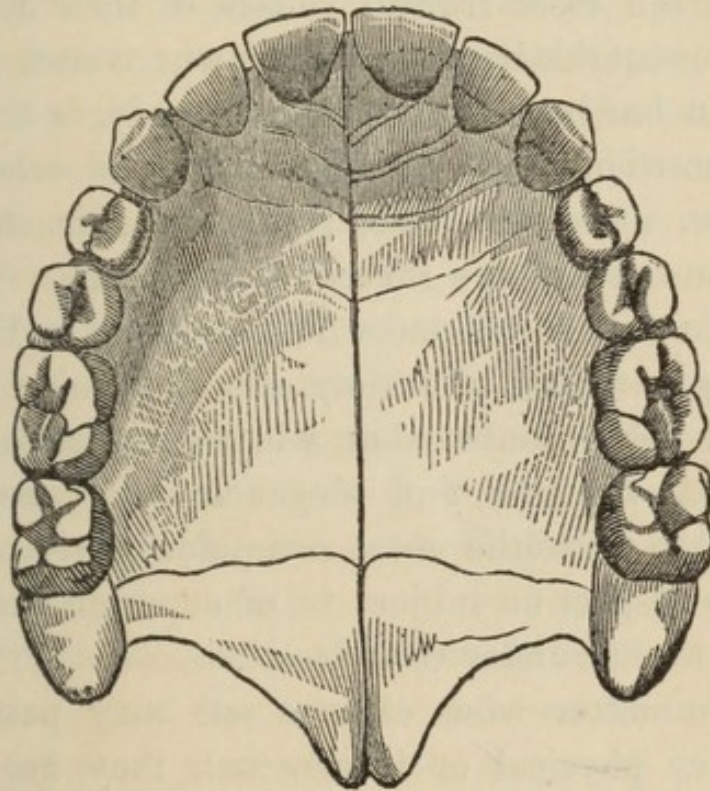


During the progress of the second dentition, an opportunity presents itself for effecting this desirable object, but everything depends upon a correct knowledge of the time when a tooth ought to be extracted, and also the particular tooth; for often more injury is occasioned by the removal of a tooth too early, than if it be left a little too long; because a new tooth which has too much room, long before it is required, will sometimes take a direction more difficult to alter than an irregularity occasioned by an obstruction of short duration. If an improper tooth be extracted, irreparable mischief will ensue; as in the case where young permanent teeth have been removed, instead of the obstructing temporary ones, which I have several times known to have been done.

Dr. Tucker remarks as follows on this subject:

“It may seem to a superficial person as favoring too much the profession if we were to recommend, both to the parent and physician, an early resort to the dentist for advice and service in reference to the teeth of children; and yet such a course would result in economy and comfort. There would be saving of money and a security against pain. A child should be early placed in the care of the dentist, that he may be spared the premature removal of the teeth on

account of a troublesome pain, and that no means necessary for the preservation of the teeth should be neglected. We are necessarily compelled to guard against two extremes, an unreasonable solicitude on the one hand, and culpable neglect on the other. Mothers are apt to look for immediate remedies where time alone is necessary, with common prudence, or to suppose that, because their own teeth required no regulating, the same is true of their children.



The above cut illustrates a complete and healthy set of teeth.

Dr. Evans, of Paris, formerly of Philadelphia, a gentleman who stands high in his profession, one who has received many marks of distinction for his professional ability, both in this country and France, remarks on the subject of irregularity of the teeth, as follows :

“ I need not impress upon any person in this audience, gentlemen, (addressed to the members of the American Society of Dental Surgeons, August, 1853,) that irregularity of the teeth is one of the most fruitful causes of their decay. To prevent this irregularity, or, where such precaution has been neglected, to remedy, is one of the most important branches of dental science. I have, therefore, made it a particular study. Circumstances have favored this course.

“ Most of the persons who consult me in Paris belong to a class of society whose position renders it indispensable that whatever pertains to personal neatness and elegance should be attended to with the most scrupulous care ; and in this respect no subject is of superior importance to that under consideration.

“ No matter what charms one may possess, whether physical or intellectual, they are all more or less neutralized by defective or irregular teeth, which at once spoil the expression of the

finest countenance, and destroy the effect of the most refined manners.

“In a country like France, especially where the love of the elegant and the beautiful is so intense as to have become almost a worship, so important a fact could not fail to be observed and appreciated; so that now, in the refined classes of society, no one can venture to neglect it.

“The, ‘human face divine’ plays too important a part in society to be neglected. Personal beauty is too intimately connected with personal grace not to require much at our hands. Nature herself, aiming always at perfection, but thwarted in a thousand ways, supplicates our assistance. She summons our *art* to the rescue. But for our response to this summons, some of her finest works—and what finer work comes from her invisible hands than a symmetrical human countenance?—would never be completed. It is our aim—and here it is the true glory of our art—to study her original design, and aid in its faithful execution.

“What picture is more repulsive to the eye, and alas, what one is more common to behold, than a human face, originally a type of beauty, designed as a magnificent *facade* to the ‘dome of thought and palace of the soul,’ robbed of its

fair proportions, and falling prematurely to decay? And how often is this sad spectacle owing to inattention to the teeth, those delicate and beautiful organs which seem, until recent times, to have been celebrated by poets only to be 'neglected by men.'

"The mouth, perhaps, more than any other feature, gives character to the face. It is the natural organ of the mind. Before the thought ripens upon the tongue, if not before it glistens in the eye, it blossoms upon the lip, which, by nature, is as sensible to the emotions of the soul as the aspen leaf to the breath of heaven. Now, that the mouth may have its full and free expression—that the organ, so to speak, may be kept in tune, its delicate ivory keys must, of course, be kept well adjusted.

"Laugh, if you please, and if your dental condition is such that you dare to, but to me an oblique tooth often represents an oblique thought. Indeed, who has not remarked that such a defect will sometimes give even a sinister expression to the most benevolent idea, and rob the gentlest word of its music and of its meaning.

"There is a story abroad of a man whose mouth was so disfigured by the irregularity of his teeth, and the natural expression of his fea-

tures were so belied by this deformity, that he regretted he could not prosecute his countenance for defamation of character.

“The story is a little extravagant, I admit, but it is not without significance. I myself have known estimable persons whose teeth were so mal-arranged as to give to the face an expression not only brutal, which is a common case, but almost malignant.

“The question has even higher bearing. Irregular teeth often occasion irregular temper. The unfortunate creature whose dental apparatus is so badly arranged that he cannot properly digest his food becomes a dyspeptic, (often without knowing the cause,) gets nervous and irritable, ruins his constitution, and makes his friends and everybody about him uncomfortable if not unhappy. And, while in this state of mind, a man of originally good disposition loses not only his temper, but, to a considerable extent, his moral perceptions.

“It is thus that the science of health is so intimately connected with the science of happiness, and that both have more to do than is commonly supposed with the science of morals.

“I know, indeed, that there are said to be certain diseases which, as it were, rarify the

grossness of the flesh, and make a man at once more sensible and more spiritual. But I am inclined to think, after no little observation, that no man was ever made more sensible or spiritual by the toothache; and I fancy that few men will discourse to you (at least from their own experience) of the regenerating influence of *dyspepsia*. I am skeptical also as to the good moral or mental influence of an infective breath; there is, so to speak, an odor of ugliness about it which is repulsive to everybody, and which can only be counteracted by an amount of personal goodness which few of us, alas, possess."

"Cleanliness," we are told, "is next to godliness," and if the proverb is true, the importance of a well ordered mouth is so manifest that its "ivory tessellated courts" should be kept sweet and pure as a temple of worship. There are other considerations of high moral bearing which might be presented, but I have already extended my remarks on this topic beyond what I had intended. I trust that enough has been said to show that irregularity of the teeth is a subject of sufficient importance to engage universal attention. And yet the world—to some extent even the scientific world—is so much more occupied with effects than causes, with remedies than

with preventives, in fine, with panaceas than with principles, that, where we have one treatise on irregularity of the teeth, we have a hundred on its evil consequences.

“I do not hesitate to say that nine-tenths of those who are in constant consultation with a dentist, would rarely, if ever, have had *personal* occasion for his services, if their teeth had been properly regulated in childhood. Irregular and defective teeth, now the almost universal rule, would, if the proper precautions were taken, be the rare exceptions. Hence the pre-eminent importance of our profession; hence the family dentist is as necessary in every community as the family physician.”

“The eruption of the teeth of the second dentition is one of the most important stages of physical development; so that the *birth*, so to speak, of these teeth, requires the attention of the family dentist almost as much as the birth of a child requires the attention of the family physician. There is nothing like being *well-born*! Neglect in this respect, (I allude to the birth of the second teeth,) is attended, almost without exception by serious consequences; but for this neglect, the painful extraction in mature age, “tooth-ache,” which has been called the “hell of dis-



eases," and the necessity of wearing artificial teeth, would be comparatively unknown. Hence I do not express myself too strongly when I say, that attention to the teeth of children is not only a useful precaution, but an imperative duty, and that (it cannot be repeated too often) no profession is more urgently demanded for the welfare of society than that of a family dentist. I have so constantly insisted upon these views in Paris that my patients are for the most part converted to my doctrine, and a large part of my practice is what may be called family practice. I am, in consequence, compelled to pay unusual attention to the regulation of the teeth, especially of children."

It will be borne in mind by the reader that the preceding remarks, by Dr. Evans, were not made with the expectation of their coming under the observation of the public in general, as they were addressed particularly to the profession. This fact gives them more value, in our estimation, for a diffused circulation.

## CHAPTER IX.

## CAUSE OF THE DECAY OF THE TEETH.

“ Yet, other evils may her care engage,  
The offspring of an epicurean age.  
Destructive caries comes with secret stealth,  
To avenge the violated laws of health ;  
Dilapidates the teeth by slow decay,  
And bears them all successively away.”

\* \* \* \* \*

“ When caries thus the solid teeth destroys,  
That sullen enemy of mortal joys,  
The toothache supervenes ;—detested name,  
Most justly damned to everlasting fame.”

The cause of the decay of the teeth is but imperfectly known. There is, undeniably, a great want of information on this subject ; how can we otherwise account for the sights we daily witness in the blackened and decayed appearance of the teeth of a large proportion of our children and youth. Most parents manifest a pride in the ap-

pearance of their children. The mother often exhibits her love and untiring exertion to please and to make comfortable her children by the neat and attractive dress which she provides for them; this is commendable, for who does not feel gratified in looking upon a company of neatly attired and well-behaved children. We admire such sights, and experience emotions of pleasure as we gaze upon them.

One thing unpleasant, however, has arrested our attention; we have already adverted to the cause, namely, blackened and decayed teeth.

It cannot be too strongly urged upon parents, and those having the care of children, to correct, as far as possible, this unsightly appearance. The personal appearance is not alone affected. Blackened and decayed teeth, diseased and unhealthy gums, exhaling a foul secretion, poisons the breath, vitiates the secretions of the mouth, contaminates the food, and spreads disease throughout the whole physical system; impairing the constitutional health, laying the foundation for *more* fatal disease, and premature death. This is no fancy sketch; these are facts which are being demonstrated every day. We see numbers in almost every community who are living witnesses to what we have stated; the

slight and fragile form, incapable of enduring the least fatigue, and shrinking when afflicted with the slightest suffering, appearing but a wreck of humanity. We believe that these evils may be lessened, may be fully overcome, and good bony and muscular bodies exist where we now have but the shadow. We will, after giving an analysis of the component parts of the teeth, discuss, as simply as possible, the cause of their decay.

Barzelius has given us the following analysis of the teeth :

In every 100 parts of bone is found	
Phosphate of Lime	62
Florate of Lime	2
Carbonate of Lime	5.5
Phosphate of Magnesia	1
Soda and Muriate of Soda	1.5
Gelatin and water	28
	100

The enamel, which is the external part or covering of the crowns of the teeth, and which serves as a protection of the bone, is much harder than the bone. Its chemical composition, according to Barzelius, is, in 100 parts,

Phosphate of Lime	83.3
Florate of Lime	3.2
Carbonate of Lime	8
Phosphate of Magnesia	1.5
Soda and Muriate of Soda	1
Animal matter and Water	1
	100

It will be noticed that the earthy matter abounds much more in the enamel than in the bone of the teeth. The proportions, however, are not always the same, but vary in the teeth of different individuals.

Having given the chemical composition of the bone and enamel of teeth, we will now refer to the agents that exert a destructive influence upon them.

We remark first, that neglect is the most fruitful cause of the destruction of the teeth. How few persons there are who regularly and carefully cleanse their teeth three times during the day. We should say, were we to express an opinion from our own observation, that there is a very limited number of this class; it is apparently a great task to many to clean their teeth once during the day, and they seemingly feel that they have done all that is requisite to preserve their teeth in a healthy condition. But the large majority no form of reasoning can induce to take *any* care of these important organs. There are many persons who are scrupulously neat in their personal attire, who would be disconcerted should their dress be disarranged, or should they discover a stray thread, a little lint, or the slightest appearance of dust on their garments, who

appear entirely to forget that they possess teeth, or that these form a part of their organization, unless reminded of it by painful disease.

These individuals are often offended by what seems want of care, whether in personal appearance or anything connected with their domestic arrangements. What comment can be made on this want of consistency. The retort might well be made upon such persons, when they are led to remark on unpleasant and disgusting objects, remember "the house I live in," remember your own physical organization—have a care for those organs that assist in preparing food for the stomach; organs, the loss of which destroys all correct or distinct articulation, and which, above all other jewels, ornaments, or dress, you are, or should be, indebted for a pleasing or favorable personal appearance.

In the second place we will notice the agency that extraneous matter, or unhealthy formations, exert on the destruction of the teeth. Under this division we will give the opinions of individuals who are eminent as physicians or dentists. Dr. Eleazer Parmley, of New York, formerly of London, remarks: "As to the cause of caries, I published my opinion many years ago, first in London and afterwards in this city, (N. Y.)

and have seen no cause to espouse a contrary opinion. I consider the immediate and exciting cause of dental decay to be always external to the tooth itself, and to consist of certain corrosive menstrua, to which these organs are exposed from bodily disease, improper aliment, powerful medicines, and a thousand other sources of acrid filth and destructive poisons that become concentrated in the mouth, and deposited upon the teeth. These procuring causes of caries may indeed derive their origin from constitutional causes, acting on the system at various periods of life, but whatever internal defects of structure a tooth may derive from original organization, however much it may be predisposed to take a diseased action under favorable conditions, still the tooth never decays until externally affected by putrescent, or corrosive, or disorganising matter, which breaks up its structure.

“That such has been my uniform opinion, will be seen from the following extract from the work on the stomach and digestive organs, published by Thomas Hare, Fellow of the Royal College of Surgeons in London, in 1821.

“The theories of the cause of the decay in the teeth, which seem to have met most attention, are those referring to an undue compression

exerted by their lateral surfaces in each other, and to a putrifactive formation of extraneous matter lodging in their interstices; the former has been set forth by Mr. Bell, of St. Thomas's Hospital, in the Medico Chirurgical Transactions; the latter was published about two years ago, by Mr. Parmley, (page 269)."

Dr. T. E. Bond remarks on this subject as follows: "The enamel and even the bony structure of the teeth are acted upon very readily by many acids, both vegetable and mineral, which combine with the earthy base, lime, and form new compounds with it, breaking up, of course, the integrity of the organ. The enamel is a crystalline mineral substance, and possesses no vital organization, consequently it is quite as liable to be acted upon by chemical agents while in its normal place, as it would be when separated from the body. It is therefore very easy to perceive that this external defence of the tooth may be very easily penetrated, and the ivory of the organ laid open to the action of alimentary matter and fluids of the mouth. It is from this cause that what is called caries results."

Dr. Brewster, of Paris, formerly of the United States, gives the following as the principal causes of the decay of teeth:



“Constitutional softness of the teeth ; the use of medicines during dentition or in after life ; the too free use of acids, which, uniting with the lime in the enamel, destroys its strength. A too slow growth of the teeth between the time of protruding their points through the gum and the full development of their crowns. It will often happen that the projecting points of the grinding teeth pass through the gum, and there for a long time remain, with a portion of the surface partially covered by the gum. As there is no union between the enamel and the gum, fine and soft particles of food insinuate themselves between the gum and the tooth. This matter decays, and the acid generated thereby acts perniciously on the gums, and lays the foundation for subsequent decay of the tooth. The remedy is simple, and, in most cases effective. It consists in removing the gum from the top of the tooth, which is performed by a skillful operation, with little or no pain to the patient. This prolific source of decay I am not aware has ever been noticed by any writer on the teeth. Another prolific source of decay is permitting a new tooth to come in contact with the decaying part of an old one. The remedy consists in removing a portion or the whole of the old tooth.

“The too free use of mercury; the accumulation of tartar; neglect of cleanliness, by suffering the particles of food to remain between the teeth after meals. Irregular living, or any other cause which occasions a disordered stomach; extremes of heat and cold; all acids, whether in fruits, powders or lotions; metallic tooth picks; injudicious dental operations; and most of the nostrums administered for tooth-ache.”

Dr. Westcott has published the results of some interesting experiments made by him for the purpose of testing the activity of certain chemical agents upon the teeth. The mode of these experiments were as follows:

“A water bath was prepared and kept constantly at  $98^{\circ}$  by a spirit lamp, and regulated by a thermometer. In these were placed vials containing the substances to be tested. In each of these was placed a human tooth—care being taken to select those of as similar organization as possible, and whose enamel was perfect. A hundred articles, such as are most commonly used as food, condiments or medicines, were thus tested, and uncommon care was taken to watch the chemical action upon the teeth subject to such application.”

The results of these experiments are summed up by Dr. Westcott in the following propositions:

1st. Both vegetable and mineral acids act readily upon the bone and enamel of the teeth.

2d. Alkalies do not act upon the enamel of the teeth. The caustic potash will readily destroy the bone by uniting with its animal matter.

3d. Salts, whose acids have a stronger affinity for the lime of the tooth than for the base with which they are combined, are decomposed, the acids acting upon the teeth.

4th. Vegetable substances have no effect upon the teeth until after fermentation takes place, but all of them, capable of acetic fermentation, act readily after this acid is formed.

5th. Animal substances, even while in a state of putrifaction, act very tardily, if at all, upon either bone or enamel. On examining the teeth subject to such influence, the twentieth day after the experiment, no visible phenomena was presented except a slight deposition upon the surface, of a greenish slimy matter, somewhat resembling the green tarter often found upon the teeth in the mouth. \*Acetic and †citric acid so corroded the enamel in forty-eight hours that much of it was easily removed with the finger nail.

\* Vinegar. † Lemon juice.

Acetic acid, or vinegar, is not only in common use as a condiment, but is formed in the mouth wherever substances liable to fermentation are suffered to remain about the teeth for any considerable length of time.

Citric acid, or lemon juice, though less frequently brought into contact with the teeth, acts upon them yet more readily.

Malic acid, or acid of apples in its concentrated state, also acts promptly upon the teeth.

Muriatic, sulphuric and nitric acids, though largely diluted, soon decompose the teeth.

These are in common use as tonics.\*

Sulphuric and nitric ethers have a similar deleterious effect; these are used frequently as diffusible stimulants. The acids of some of the salts also corrode the teeth. Super tartrate of potash, or cream of tartar, destroys the enamel very readily. This article is often used to form an acidulated beverage. (It is also the basis of certain popular dentifrices which whiten the teeth by corroding their surfaces.) Raisins so corroded the enamel in twenty four hours that its surface presented the appearance and consistency of chalk.

\* Tonics are medicines which invigorate the system, or impart tone to the muscular fibre

Sugar had no effect until it had undergone acetous fermentation."

We have thus far noticed some of the reasons of the decay of the teeth. There are still other causes (the innate) which should be noticed in this connection.

Prof. C. A. Harris remarks :

"The teeth of some persons are so susceptible to the action of deleterious agents, that they no sooner emerge from the jaws than they are involved in general and rapid decay ; while those of others, though exposed to the same causes, remain unaffected through life. A similar difference of susceptibility exists in the parts in which these organs are contained."

With the teeth these differences of susceptibility to be morbidly affected are planted in them at the time of their formation, and are the result of different degrees of perfection with which this process is accomplished ; for, in proportion as these organs are perfect, is their capability for resisting morbid impressions increased, and as they are otherwise it is diminished. This is true of every part of our being ; but, as the teeth are formed, if they are not impaired by disease, so they continue through life, except that they gradually acquire a very slight degree

of density, whereby their liability to disease is correspondently lessened.

By an inspection of the teeth M. Delabarre says : " we can determine whether the original or innate constitution be good or bad ;" to the correctness of which Prof. C. A. Harris adds his testimony :

" Although, as has often been remarked by writers on odontology, the teeth of the child, like other parts of the body, are apt to resemble those of its parents, so that when those of the father or mother are bad or irregularly arranged, a similar imperfection will generally be found to exist in those of the offspring, it does not *necessarily* follow, and when it does, it is the result of transmission of some constitutional impairment, whereby the formation process of these small bones is either disturbed or prevented from being effected in a healthy and perfect manner. The teeth of the child therefore, as Delabarre correctly observes, may be said to depend upon the health of the mother and the aliment from which it derives its subsistence. If the mother be healthy and the nourishment that is given the child be of good quality, its teeth will be dense and compact in their texture, generally well formed and well arranged ; and, as a consequence,

less liable to be acted on by morbid impressions than those of children of unhealthy mothers, or that subsist upon aliment of a bad quality. To obviate the entailment of this evil M. Delabarre recommends mothers having teeth constitutionally bad, to abstain from suckling, and that this highly important office be entrusted to a nurse having good teeth, asserting at the same time that, by this means, the transmission of so troublesome a heritage as a bad denture may be avoided."

M. Mason, a French Dentist, remarks as follows: "Does the child derive its life from parents that are unhealthy? The enamel of its milk teeth will be bad; the teeth themselves will be surcharged with a bluish vapour, and in a short time will be corrupted by humid and putrifying caries. When the parents are only weakly or delicate, the enamel of the primary teeth will have a bluish appearance, there will be a tendency in them to dry caries, which does not ordinarily make much progress, and seldom causes pain.

"The teeth, while in a pulpy state, partake of the health of the organism generally. As that is healthy and strong, or unhealthy and weak, so will the elementary principles of which they

are composed be deteriorated or of good quality ; but, after ossification has commenced, the parts ossified cease to be influenced by, or obey the laws of, the other parts of the body. If the general health be good at the time this process is going on, it will be evidence of their density and color ; if bad, in the looseness of their texture, &c."

Dr. Thomas E. Bond remarks :

"The fluids of the mouth are readily changed from their normal condition, where the digestive organs are feeble, and perform their functions badly. When such is the case the secretions of the stomach and its appendages are so changed as to unfit them for the perfect performance of their work ; they become, to a certain extent, foreign matters, and are capable of exciting irritation, and also, by mixing with alimentary matters, converting them into deleterious agents. Generally the change produced upon the fluids of the stomach, &c., under such circumstances, renders them more acrid.

Corresponding changes often takes place in the fluids of the mouth. They also become acrid, and in such cases corrode the dental structures.



They are also liable to be produced in excess, and to be very abundant in salts, which are collected, mixed with viscia mucus about the teeth, especially of the lower jaw, forming the several varieties of tartar.

The saliva is acrid in dyspepsia, consequently caries are apt to prey upon the teeth of persons suffering from indigestion. Nor may the dentist expect to arrest the devastation unless he can remove the cause that is continually decomposing the bony structure of the teeth.

That the saliva is acrid, in certain diseases, is abundantly shown by M. Donrie, of Paris, who was so struck with the changes in the chemical character of the fluids of the mouth, as responding to disordered states of the stomach, that he suggested the use of this fact as the best means of deciding upon doubtful cases of such disorders.

Schill observes, that carious teeth indicate long continued irregularities of digestion. The teeth become very sensitive in many nervous diseases, and in consequence of the presence of acid in the stomach, are sometimes covered with a whitish or grey mucus; this occurs chiefly in catarrhs, and inflammation of the digestive and respiratory organs."

## CHAPTER X.

INFLUENCE OF DISEASED TEETH AND GUMS  
UPON THE GENERAL HEALTH.

The teeth, more than any other agency, exert a great influence, directly or indirectly, in promoting the diseases with which the human race is afflicted. The general health of the body depends much on the state of the mouth or the teeth. The intimate relation which the buccal cavity holds to every part of the body, gives it an influence, physically, which has no limitation. The physician will tell more from an examination of the changes there presented, than from any other part of the body.

Thomas E. Bond, A. M., M. D., in his work on Dental Medicine, remarks on this subject as follows :

“ That the diseased condition of the teeth, and the structure adjacent to them, exerts a most per-

nicious influence upon the general health, is a fact as well established as any other medical observation.

“It might be granted, *a priori*, that if physiological conditions of the teeth, owing to their peculiar position, association and history, may exercise powerful influence on the health of other organs, pathological conditions of these same teeth cannot be entirely harmless.”

Again, if we would examine the structure of a tooth, and perceive how completely its sensitive part is enclosed in an unyielding bony case, we might readily infer, from the consequences of compression in other parts, that the swollen and inflamed pulp, &c., would be exceedingly painful. If, too, we would regard the close connection existing between the teeth, the rapidity with which the flash of sympathetic pain darts along the nervous chords which vitalize them, and the intolerable protracted suffering which ensues upon even trifling irritation of these sensitive filaments, and remember that the pain itself is fully capable of deranging the whole economy, and inducing serious and fatal disorder, we might, without the aid of much reflection, adopt the very rational conclusion that the diseases of the teeth must be of considerable consequence to the entire

organization. We might, also, with similar propriety, concede that the teeth were not made merely for ornament, and that mastication and insalivation are something more than mere forms of introduction to the stomach; that they are important to digestion, which is important to the entireness of organs, and the performance of functions, and that if mastication and the insalivation accompanying it be imperfectly performed, some corresponding imperfection of digestion must result. We might also infer from the known consequences, where they are the approximate local causes of diseases of the mouth without supposing the existence of many dead stumps of teeth, so long may we look for those acute symptoms and effects which have been stated, and see them change alternately from one form of disease into another, but after that period, or when the local maladies have originally commenced in the gums, periosteum, alveolar, and maxillary bones shall have extended to a certain degree, a total transition into a permanent chronic state of the disease takes place.

“In such a state of disease, nature seems exclusively and actively engaged, by producing inflammation and suppuration, in extricating the mouth from all the morbid causes effecting the

diseased parts, such as dead roots and stumps, tartar, or teeth which are loose or irregularly situated. The sanative power of nature being, however, very rarely competent to effect such a case, the various diseases of the gums, periosteal, alveolar and maxillary bones, are exasperated and for the most part terminate in a state of suppuration and mortification."

Dr. Bond observes :

"When the chronic condition here described has been fairly reached in the progress of disease, the sensibility of the parts is much diminished, the gums and periosteal are thickened and callous, and the continual discharge sufficiently depletes the vessels to relieve them of the suffering incident to inflammatory ingorgement. All resistance to the devastation of the dental arch seems to cease, and the parts are abandoned to rapid destruction. In the meantime the patient congratulates himself that his teeth have ceased to ache, and consequently gives himself no trouble about them. Inflammation, suppuration and caries now spread along the dental arch, until every tooth is broken down, and every root has become a permanent irritant, provoking a constant purulent discharge from the soft parts about it.

“The food is no longer chewed, and every thing which passes through the mouth is mixed with a vitiated compound of saliva, mucus, puss and blood, which descends to the stomach to mingle with the gastric juice, and to deteriorate the quality of that most important fluid.

“The absorbents, too, are constantly at work, and the dissolved fragments of carious bone, &c., are constantly thrown into the current of the blood.

“Dyspeptic symptoms, merasmus, and other pectoral symptoms, violent neuralgic affections of the face, great nervous depressions, hysterics or hypochondriasis may be expected to attend such conditions of the teeth.

“The dyspepsia is easily accounted for. In the first place the food is badly prepared for the stomach; 2d, the fluids of the mouth, constantly trickling into the stomach, impair its tone and vitiate its solvent secretion; and 3d, the continual demand made upon the system by the vain efforts which nature makes to cure the diseases of the teeth, and also by the frequent and severe pain, diminishes the nervous influences which the stomach receives, and impairs its powers.

“Every one is aware that, when the stomach is full, there takes place in that organ such a

concentration of nervous energy as is sensibly felt by its loss, in other parts of the body. Hence the drowsiness and the indisposition to mental and physical effort experienced after a hearty meal.

“It is also well known that anything which attracts from the stomach this accumulated nervous power impairs appetite and digestion.

“Extraordinary exertions, powerful intellectual efforts, venereal excesses, &c., all act in this way upon the digestive apparatus. Pain, also, wherever located, produces a similar effect, and the impairment from this cause will be important in proportion to the frequency and continuance of the suffering.

“In these several facts we have sufficient reasons for the indigestion which so frequently attends extensive diseases of the teeth.”

As it has been our design from the commencement of this little work to make it (if possible) one of value, we have preferred to present the reader with facts and information on the subjects discussed, from those writers whose experience and observation would entitle them to a careful and candid reading.

This portion of the treatise we wish to present in as *truthful* and *powerful* manner as pos-

sible. We believe this subject is little known, and much less regarded. When we shall see people paying that attention to it which its importance demands, we shall expect to realise a great reformation in the physical being of man.

Dr. Rush observes on this subject :

“I have been made happy by discovering that I have only added to the observation of other physicians in pointing out a connection between the extraction of decayed and diseased teeth and the cure of general diseases. Several instances of the efficacy of that remedy in relieving headache and vertigo are mentioned by Dr. Darwin. Dr. Gatu relates that M. Petit, a celebrated French surgeon, has often cured intermittant fevers which had resisted the bark for months and even years by this prescription ; and he quotes from his work two cases, one of consumption, and one of vertigo, both of long continuance, which were suddenly cured by the extraction of two decayed teeth in the former, and two supernumerary teeth in the latter case.

“These facts should not surprise us, when we recollect that the most general diseases are brought on by very inconsiderable inlets of morbid excitement into the system. A small tumor, concealed in the fleshy part of the leg, has been



known to bring on epilepsy. A trifling wound with a splinter or a nail, even after it has healed, has often induced a fatal tetanus, (lock jaw.) Worms in the bowels have produced internal dropsy of the brain, and a stone in the kidney has excited the most violent commotions in every part of the system. Many hundred facts of a similar nature are to be met with in the records of medicine.

“When we consider how often the teeth, when decayed, are exposed to irritation from hot and cold drinks and aliments, from pressure by mortification, and from the cold air, and how intimate the mouth is with the whole system, I am disposed to believe they are often unsuspected causes of general, and particularly of nervous diseases. When we add to the list of those diseases the morbid effects of the acrid and prurid matter which are sometimes discharged from carious teeth, or from ulcers in the gums created by them, also the influences that both have in preventing perfect mastication, and the connection of the animal functions with good health, I cannot help thinking that our success in the treatment of all chronic diseases would be very much promoted by directing our inquiries into the state of the teeth of sick people,

and by advising their extraction in every case in which they are decayed. It is not necessary that they should be attended with pain in order to produce diseases, for splinters, tumors, and other irritants before mentioned, often bring on diseases and death, when they give no pain, nor are suspected as causes of them. This transition of sensation and motion to parts remote from the place where impressions are made, appears in many instances, and seems to depend upon an original law of the animal economy."

Dr. L. S. Parmley observes: "That the general health of the body is affected by the state of the stomach and lungs, is a proposition which few, if any, will deny. And that the condition of either depends on the nature of whatever is introduced into it, will likewise be readily admitted. The effect which the state of the teeth may have upon the lungs may therefore be considered in the first place. The chemical process which is carried on in the mouth, by means of its moisture and heat, will always, in a greater or less degree, cause the putrifaction of whatever extraneous matter is permitted to lodge upon or between the teeth. The air, even in the most open situations, is affected by passing over any putrescent substance.

Now, as the mouth is the chief passage by which the air enters the lungs, and as the air is affected by whatever it passes over or through, the lungs can never receive it in a pure state, except the mouth, through which it is introduced, be perfectly clean and healthy. But, while any extraneous matter is permitted to accumulate and remain on the teeth, the mouth will become naturally unclean and unhealthy, imparting an infectious taint to the air which is inhaled.

“Fetid breath is occasioned by the state of the mouth, and seldom results from the condition of the stomach, or digestive organs, as erroneously supposed. The escape of vapor from a disordered stomach can produce only a temporary effect, but from uncleanliness of the mouth we find the taint constant and habitual: and unless the cause be removed, all the spices and perfumes of the east, though they may for a moment conceal, cannot remove it. Cleanliness of the mouth, therefore, is of great importance to the general health; in fact, the danger of the lungs from a constantly putrid effluvium has been strongly commented upon by the faculty of medicine, as a leading cause of pulmonary consumption.”

“A person complained,” say Dr. Fuller, “of seemingly violent spasms in the head, which instantly deprived her of sense and motion, and she fell down apparently lifeless for some time. She had been subject to these fits, I think, for two or three years, but of late they had become very frequent; no pain succeeded them, nor were they preceded by any symptoms, except by a trifling pain that darted into one of the third grinders that was decayed; nor did she know what toothache was. Having seen the most astonishing effects of caries in these teeth, I recommended the tooth to be extracted, and on removing it she expressed herself by saying that it seemed to pull up the root of the complaint.

“I have twice extracted teeth when the most severe pain was in the elbow; in both instances it was one of the large molars of the under jaw, and in both the pain of the elbow vanished on removing the teeth.”

We will introduce a number of specific cases of disease which have been traced to the unhealthy condition of the teeth. The cases here presented have for the most part occurred under the immediate observation of able and scientific

physicians, so that there can be no doubt as to their correctness.

Case 1. "Sometime in the month of October, 1801," says Dr. Rush, "I attended Miss O. C., with a rheumatism in her hip joint, which yielded for a while to the several remedies for that disease. In the month of November it returned with great violence, accompanied with a severe toothache. Suspecting the rheumatic affection was excited by the pain in her tooth, I directed it to be extracted. The rheumatism immediately left her hip, and she recovered in a few days. She has continued ever since to be free from it.

"Soon after I was consulted by Mrs. T. R., who had been affected several weeks with dyspepsia and toothache. Her tooth, though no mark of decay appeared in it, was drawn by my advice. The next day she was relieved from her distressing stomach complaints, and has continued ever since to enjoy good health; from the soundness of the external part of the tooth, and the adjoining gums, there was no reason to suspect that a discharge of matter from it had produced the disease in the stomach. (Doubtless it was due to the irritation and the consequent deviation of nervous influence to the suffering parts.")

Case 2. (Dr. Rush.) "Sometime in the year of 1801 I was consulted by the father of a young gentleman in Baltimore who had been affected with epilepsy. I inquired into the state of his teeth, (an inquiry which is even yet very unusual in such cases, which serves to show the superiority of Dr. R. in judgment and comprehensiveness of thought,) and was informed that several of them in his upper jaw was very much decayed. I directed to have them extracted, and advised him afterwards to lose a few ounces of blood at any time when he felt the premonitory symptoms of the recurrence of his fits. He followed my advice, in consequence of which I had lately the pleasure of hearing from his brother that he was perfectly cured."

In the Dublin Medical Free Press I find the following case recorded :

"Dr. Emmench relates a case of this kind : A man consulted him on account of a painful affection of one of his eyes, which had lasted fourteen years, and occasioned great suffering. There was considerable vascularity of the conjunctive and sclerotica, especially round the cornea, which structure was somewhat opaque and spotted. There was a continual flow of tears, with pain and intolerance of light. All these symptoms

were greatly aggravated by any indiscretion in diet, and the use of the slightest stimulus, such as a single glass of wine. All kinds of remedies had been tried in vain, at different times, and the affection seemed incurable. On examination of the upper jaw, Dr. E. found a carious tooth in the side corresponding to the affected eye. The portion of the jaw around the tooth was painful, and very sensitive to the touch. The patient thought that the affection of the tooth had begun simultaneously with that of the eye. The tooth was drawn, and almost immediately afterwards the symptoms relating to the eye began to subside, and soon entirely disappeared. The affection of the eye was evidently the result of sympathy between the second and third branches of the fifth pair of nerves."

Dr. Rush, (*Med. Inq. and Observations on the Diseases of the Mind*, p. 33,) observes that, "irritation from certain foreign matters retained in irritable parts of the body is among the causes of insanity." He adds: "I once knew some small shot, which were lodged in the foot of a school-boy, induce madness several years after he became a man. Insanity has been brought on in one instance by decayed teeth, which were not accompanied with pain."

There have been published, by Dr. Koecker, several cases which illustrate the subject now under consideration. We copy a few which we consider important :

“A literary gentleman in the neighborhood of London had been for several years under the medical care of Mr. J. Derbyshire, of Greek street, Soho, on account of a constant state of derangement of his digestion. Much sedentary occupation and some excessive grief had of late greatly augmented the distressing symptoms generally accompanying this distressing disorder. His disease had assumed the character of Hypochondriasis. His spirits were so dejected, and the state of his bodily health was so low, that he was no longer capable of attending to his ordinary business.

“Having had some conversation with Mr. Derbyshire on the influence of diseases of the teeth upon the general health, that gentleman was induced, at his next visit, to inquire into the state of his patient's teeth, and learning that they were in a very deplorable condition, he proposed a consultation with me on the subject. After a particular examination, I found every tooth in the patient's mouth more or less carious, or dead, and all the gums and sockets in a very diseased



state. On the 27th of May, 1824, twenty-one teeth and roots were extracted, all of which were more or less in a state of putrifaction, three large grinders only excepted, which were either suffering from complicated caries, or producing morbid irritation upon the other parts from some other causes.

“The mouth was restored to perfect health in the course of about six weeks. During the progress of treatment of the disease of the mouth, the general health improved very surprisingly; and after the restoration of perfect health to all the remaining teeth, and their relative parts, the patient enjoyed uninterrupted health, and returned to his ordinary professional occupation.”

“Mrs. P——, a lady of great respectability, under the medical care of Dr. Jule Rucco, of Leicester Square, had, some years since, continually suffered from dyspepsia, as well as from various kinds of nervous attacks of a very annoying and alarming nature. This judicious physician had for a long time suspected the cause, and frequently proposed to consult. By the wish of the lady, however, the dentist of the family was at last sent for, and three or four teeth and roots were removed, which, according to the assertion of the dental attendant, were all

that could be extracted. The disease, however, was only aggravated by this interference, and the sufferings of the patient increased more and more.

“About six months afterward the Doctor urged a meeting with me on the subject, and at last I was sent for. I found the lady laboring under a complete salivation from an extraordinary sympathy of all the glands in any way connected with the teeth. On the previous night, and, indeed, for many nights preceding, she had been suffering such violent fits of convulsion as to alarm the whole family. The face was affected with an acute erysipelalous inflammation, accompanied with headache, as also with considerable derangement of the digestive functions, such as sickness, vomiting, loss of appetite, &c. By examining the mouth I found that the previous dental treatment had been but very partial, and I proposed the removal of every tooth and root which produced irritation.

“The lady consented immediately to my proposal, and the necessary operations were performed on the 8th of October, 1824, when nine decayed teeth, (some of them were roots) were extracted. The patient was requested to rinse her mouth frequently with a diluted astringent

lotion. By this simple local treatment, and by the further medical care of Dr. Rucco, she was perfectly cured in about a week after the operation.

“Very soon after her recovery the lady was enabled to fulfil a promise of marriage, which for sometime had been prevented by her protracted and distressing disease. Since that period she has enjoyed perfectly good health.”

The following interesting case, reported by Dr. C. A. Harris, is illustrative, we believe, of numerous cases to be met with in almost every community. Many of the troubles described are not uncommon to those suffering from decayed teeth.

“In September, 1830, I was consulted by Mr. —, at that time a resident of New York. Before I examined his teeth he informed me that his general health had been very bad for four or five years past, and that he had applied to some of the most eminent physicians of New York, Troy, and Albany, but had not obtained any permanent relief for his sufferings.

“The character of the symptoms that prevailed at this time was very peculiar. His digestive organs were so much deranged that he was obliged to observe the strictest regimen, and conform himself to the simplest kind of vegeta-

ble food. Besides the dyspeptic affection with which he was troubled, he had severe paroxysms of headache and vomiting, that occurred at regular intervals of from four to five weeks. These were always preceded by numbness, which commenced in his tongue, and extended thence through the whole system. This sensation continued usually for about two hours, when it was succeeded by a violent pain in the head, and partial vertigo, from which, in about ten hours, he was relieved by vomiting. The effects of these paroxysms lasted about ten days, and the other symptoms had continued, without much mitigation, for three years.

“On examining his mouth I gave it as my opinion that the diseased state of his teeth was the cause of his affliction. This idea, though entirely novel to him, he was disposed to believe correct, and therefore readily consented to the treatment I prescribed. Many of his teeth were much and nearly all of them covered with tartar. The roots of some were denuded of the gums, the alveolar process more or less absorbed, the gums turgescient, fungoid, bleeding on the slightest touch, and of a dark red color. The secretions of the mouth were viscid, and their exhalations exceedingly offensive.

“Such of his teeth as could not be perfectly restored were extracted, and as much tartar taken away as could be conveniently removed at one time, and the rest at subsequent sittings. His gums were freely scarified, and a tonic astringent and detergent wash directed to be used three or four times every day. Under this treatment the local affections of the mouth rapidly disappeared, and in about four or five weeks his teeth and gums became perfectly healthy. His general health also began to improve, and in about two months it was perfectly restored, and has so continued.”

Dr. M——, an eminent practitioner of this State, reports the following extraordinary case:

“In the summer of 1834 I was called to visit Mr. D. M——, who had come into this neighborhood to obtain the benefit of the country air, having resided in Baltimore from his earliest youth. When I saw him he was in the last stage of phthisis pulmonalis. He gave me the following history of his case:

“About eight years previous he felt soreness and tumefaction in his gums at the posterior part of his mouth, and as he had never cut the dentes saprantiaë (wisdom teeth) he thought the disquietude was occasioned by the progress of

one of these teeth, and, in consequence, gave it no attention until the soreness and inflammation had extended themselves over the whole surface of his mouth and fauces. The tooth not having protruded through the gum, he consulted his family physician, who advised immediate extraction.

“In conformity with his advice, he called on an eminent dentist of Baltimore, but the tooth not having presented itself, and the cause of his suffering being doubted, the operation was deferred. His sufferings, however, having become intolerable, and the irritation having extended itself to the lungs, producing considerable uneasiness, he determined, if it were at all possible, to have the tooth removed. A few days after he stated his determination to the dentist. The gum was freely split and, after considerable pain and difficulty, the tooth extracted. The inflammation in his mouth and fauces immediately subsided, his appetite returned, and his general health became as good as formerly.

About three years subsequent to this, his mouth and fauces, under similar circumstances, and from the same cause, became very sore and painful. The inflammation soon reached the lungs, and established a confirmed phthisis pul-

monalis. He died a few weeks after my first visit.

“The subject of this case was doubtless the victim of tubercular disease of the lungs. The tubercles were latent until the dental irritation was propagated to them, when inflammation and softening rapidly ensued. The teeth, though they did not, strictly speaking, cause the consumption, evidently precipitated it, and perhaps anticipated the fatal development by many years. The same physician to whom we are indebted for the preceding case, has recorded another, in which the fatal result was more directly attributable to dental suffering.”

My friend, Dr. L., of Frederick, Md., was called to visit a young gentleman who labored under violent pain of the face and inferior maxillary, with very great tumefaction of the gums. His sufferings were traced to the roots of one of his molar teeth, which had been broken in an attempt to extract it. His gums and the glands of his throat became so much enlarged that it was impossible to remove the offending portion of the teeth. The inflammation, notwithstanding the skillful exertions of the physicians, rapidly increased, high and intractable fever supervened, deglutition became totally obstructed, and in a few days he died.”

“ A case very similar to the last, though more fortunate in its results, came within my knowledge lately. A dentist was applied to to extract a molar tooth ; this he did. He told the patient that the tooth had come out entire ; and dismissed him. Violent inflammation ensued, a large abscess formed, and the life of the man was brought to imminent jeopardy. His physician called in a surgeon, and both being baffled, an eminent dentist was consulted. He suspected that a fragment of the root had been left, and, after great difficulty, owing to the swelling of the parts, he succeeded in extracting it, and saving the life of the patient.”

We find recorded, on page 287 of Fitch's Dental Surgery, the following case :

Dr. Fitch says : “ The following remarkable case has occurred in my practice since the first edition of this work was first published. In February, 1827, Doctor Samuel Jackson, of this city, called and requested me to see Mrs. R——, living in Tenth, above Walnut street, who, he said, was laboring under every symptom of confirmed phthisis pulmonalis (consumption,) and also appeared to suffer greatly from a diseased state of her mouth. I accordingly called on Mrs. R——. The following were her symp-



toms : great emaciation, hectic fever, almost constant cough, nearly a total loss of voice, articulation being extremely difficult, the voice as if speaking through a trumpet. Dr. Jackson said that in a practice of seven years in the Hospital, Almshouse and private practice, he had never seen a case where a person recovered from the symptoms under which Mrs. R—— labored. I need not say that the Doctor's practice was very extensive. The following was the condition of Mrs. R——'s mouth : About two years before she had the upper wisdom tooth of the left side plugged, and the plug was pounded in with a mallet and punch, by a dentist of this city. The fangs of the tooth converged together so as to form a fang of conical shape. In hammering in the plug the socket was much injured. A chronic inflammation took place, which passed back over the palate, half arches, and some distance down the œsophagus ; also over the glottis epiglottis, (larynx.) It then travelled forward on the right side of the under jaw, and caused to inflame and slough away all the sockets and teeth of the lower jaw but one, which was the left *dens sapientiæ* (wisdom tooth,) which had not become affected when I was called in, and which was sound. When I first saw Mrs. R—— the

process of inflammation, sloughing and gangreen was at its height. Extensive exfoliations of the jaw were taking place. Dr. Jackson and myself concluded that the patient could not live more than four weeks.

*Treatment.* I at once removed all her teeth that were loose, and whose sockets were in a state of gangreen and exfoliation. I likewise, as fast as possible, removed all the dead bone, and directed the patient to wash her mouth constantly in a strong infusion of powdered galls. In about eighteen days her mouth was perfectly well. The amendment of her general health was surprisingly rapid. In five weeks she was able to take long walks in the street, and in six months she was restored to perfect health. Nearly six years have elapsed, and she still continues perfectly well."

The remarks by Dr. Fitch, in connection with this case, should be impressed upon the mind of the reader. We believe that great and good results would follow were these facts known and observed by every person. Dr. Fitch remarks :

"I think we may safely infer, although diseased teeth do not in every instance excite general diseases of the system and of the lungs, still, like an insidious enemy, they are ever ready to

unite with or exasperate other causes, so as to undermine the powers of the system. I have dwelt at considerable length on this subject, and would earnestly solicit the attention of the Medical Faculty in general, to a critical inquiry into the state of the teeth in all cases of pulmonary affections; and there is hardly a doubt but what their inquiries would eventuate in the general conclusion that a diseased state of the teeth and gums do, very frequently, excite pulmonary affections, especially in persons predisposed to them, and *always* aggravate these complaints, let them be excited by whatever cause they may."

There is not the slightest reason for doubt that dyspepsia, with all its train of suffering, is induced by a diseased state of the teeth and mouth.

Any person who has suffered with the tormenting pain of toothache, but for a few days, knows the influence it exerts upon body and mind. Such persons can answer whether the appetite craved the usual amount of food, and whether the food they partook was sufficiently masticated.

A person suffering from diseased teeth and gums must acknowledge that they do not and cannot masticate their food. Such persons have a dread of allowing the food to touch their teeth;

(of this class the number is by no means small.) 'Bolting the food,' as it is termed, is commonly practiced by such individuals.

Another active cause in producing dyspepsia, in connection with the want of proper mastication, is the putrid secretions which form around such diseased teeth and roots. These putrid secretions mingling with the food, enter the stomach, deranging its healthy action, and affecting the blood. Diseased and mortified animal secretions cannot exert any other than an injurious influence upon the whole body. Who can not mark some individual whose health is being undermined as by a slow consumption from these causes. We see them emaciated and spiritless, groaning under the weight of an existence made miserable by a part of their own system, which, when in a healthy state, is one of the principal sources of enjoyment, because it ministers to the sustenance of that system.

We might greatly extend these remarks, and adduce numerous cases not as yet presented to the reader, in support of what we have already advanced on this subject. Were we to state the fact that the subjoined list of diseases was very often traceable to the diseased condition of the mouth, many might be led to doubt the truth of

such statement. Sufficient evidence can be produced at any time, however, by any competently instructed dentist, that such diseases have and do result from the causes above named. The following are some of the diseases referred to :

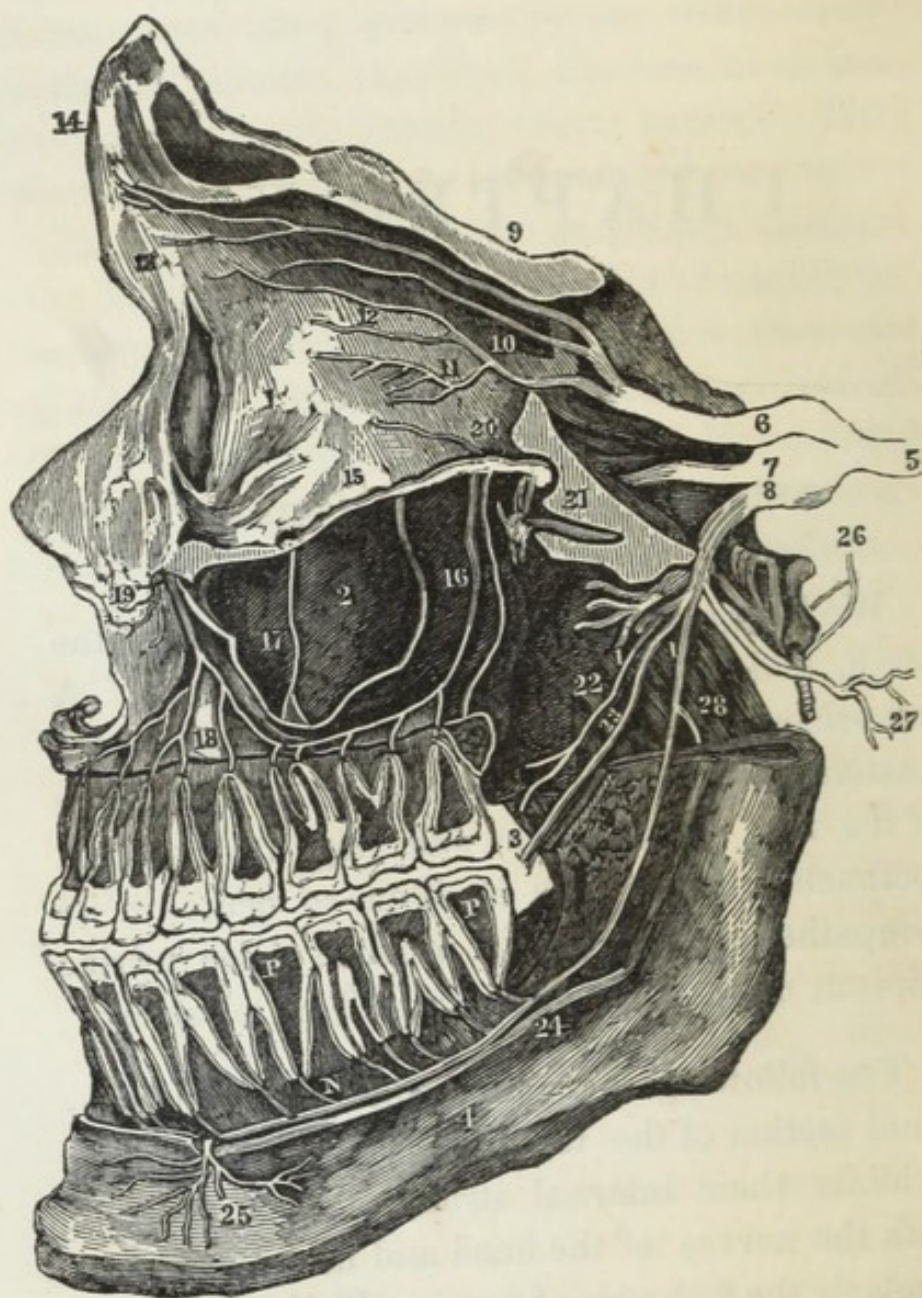
Phthisis *Pulmonalis*, (*Consumption*,) *Dyspepsia* ; Pain in the Ear and formation of matter in that organ ; *Inflammation and painful affections of the Eyes*, Ophthalmia, and sometimes loss of the eyes ; Epilepsy and Hysteria Hypochondriasis, Rheumatic Affections, Tic Doloreaux, Sympathetic Headache, Inveterate Headache.

## CHAPTER XI.

## NEURALGIA, OR TIC DOLOREUX.

We have already referred to the nerves of the teeth, and to their sympathetic relations. A proper acquaintance with this division of the anatomy of the head is essential to a knowledge of the real cause of the suffering arising from toothache. This pain is often so acute in its sympathetic action as to produce those terrific nervous diseases, Neuralgia and Tic Doloreaux.

The following engraving represents a longitudinal section of the teeth of a young person. It exhibits their internal structure, in connection with the nerves of the head and face, more particularly the fifth pair of nerves, (Trifacial,) (Trigeminus) :



A view of the distribution of the Trifacial or fifth pair of Nerves. 1. Orbit. 2. Antrum of Highmore. 3. Tongue. 4. Lower Maxilla, or lower jaw. 5. Root of the 5th pair, forming the ganglion of Casser. This root or ganglion is made up of eighty to one hundred filaments of nerves. 6. 1st branch Ophthalmic. 7. 2d branch Superior Maxillary. 8. 3d branch Inferior Maxillary. 9. Frontal branch, dividing into external and internal frontal at 14. 10. Lachrymal branch, dividing before entering the lachrymal gland. 11. Nasal branch, just under the figure in the denticular or ciliary nerves. 12. Internal nasal, disappearing through the interior ethmoidal foramen. 13. External nasal. 14. External and internal frontal. 15. Infraorbital nerve. 16. Posterior dental branches. 17. Middle dental branch. 18. Anterior dental nerve. 19. Terminating branches of infraorbital, called labial and palberal nerves, connected with the lip and eye. 20. Subcutaneous malae, or orbiter branch. 21. Pterygorid, or recurent, from Meckel's ganglion. 22. Five anterior branches of 3d of 5th, being nerves of motion, masseter, temporal, pterygoria and buccal. The four nerves last mentioned are connected with muscles bearing the same names, and are the nerves and muscles which are called into action in moving the jaws or masticating. 23. Lingual branch joined at an acute angle by the chorda tympani. 24. Inferior Dental nerve, terminating in 25—mental branches. 26. Superficial temporal nerve. 27. Auricular branches. 28. Mylo hyoid branch. P, pulp which fills the roots of teeth, and which, when exposed by decay, become irritated, inflamed, and swell. The irritation and swelling of this pulp confined within bony walls, in connection with the nerves, causes toothache. N, small nerves which enter the roots of the teeth, forming the connection with the principal nerves.

Tracing the nerves of the teeth and their connection, as shown in the engraving, can it be a matter of surprise that Neuralgia, or Tic Doloreaux, should often have its origin in the teeth?

Wilson, in his *Anatomy of the Human System*, describes, as follows, the origin of the fifth pairs of nerves: "The fifth nerve, the great sensitive nerve of the head and face, and the



largest cranial nerve, is analogous to the spinal nerves in its origin by two roots, from the anterior and posterior columns of the spinal cord, and in the existence of a ganglion on the posterior root. It arises from a tract of yellowish-white matter situated in front of the floor of the fourth ventricle and the origin of the auditory nerve, and behind the crus cerebelli. This tract divides inferiorly into two fasciculi, which may be traced downwards into the spinal cord, one being continuous with the fibres of the anterior column, the other of the posterior. Proceeding from this origin, the two roots of the nerve pass forward, and issue from the brain upon the anterior part of the crus cerebelli, where they are separated by a slight interval. The anterior is much smaller than the posterior, and the two together constitute the fifth nerve, which, in this situation, consists of seventy to a hundred filaments held together by a pia mater. The nerve then passes through an oval opening in the border of the tentorium, near the extremity of the petrous bone, and spreads out into a large semilunar ganglion, the Casserian. If the ganglion be turned over, it will be seen that the anterior root lies against its under surface, without having any connection with it, and may be followed

onwards to the inferior maxillary nerve. The ciliary ganglion divides into three branches, the ophthalmic superior, maxillary and inferior maxillary."

The three nerves, namely, ophthalmic, superior maxillary, and inferior maxillary are the nerves that supply the teeth. Each of these nerves send off other branches.

The branches of the ophthalmic are the frontal, lachrymal and nasal.

The branches of the superior maxillary are the orbital. Two from Meckel's ganglion, posterior dental, middle dental, anterior dental, muscular cutaneous. The inferior maxillary nerve has but one branch, the mylohyoid.

The several branches specified send off still other branches; keep in mind the fact, likewise, that they all connect with the teeth. These explanations may appear complex, and unnecessary; what we wished to show however, by them, was the extended nervous connection of the teeth.

We will now present the subject to which the preceding explanation of the nerves of the face relate. Neuralgia facial. Professor Thomas E. Bond gives us the following definite explanation of this disease. He remarks first, that "certain nerves are the organs of sensation, and, like

the other parts of the body, are liable to disease. When such is the case, unless the affection be of a kind to lessen their sensibility, they become the seat of very severe suffering, which is called neuralgia."

The superficial nerves being by far the most sensitive, and withal the most exposed to injury, are very much more frequently affected with neuralgia than those which are deeply seated.

"Neuralgia is a very acute pain, which generally commences suddenly, and occupies a single spot, from which, as the attack progresses in violence, it radiates by pangs or flashes to the surrounding nerves. The pain is generally sharp and darting or burning, and may be distinguished, among other characteristics, by this, that in its radiations it follows the threads of the nerves without extending to the adjacent structures. There is no heat, redness nor swelling, the absence of which are sufficient to distinguish the disease from inflammation. The pain, after continuing for a longer or shorter time, rarely longer than a few hours, abates, generally suddenly, and disappears, to return with equal rapidity if the proper provocation be repeated.

"Facial neuralgia is that to which we wish more particularly to refer.

“Neuralgia facial is sometimes called tic doloureux. The word tic means a sudden twitching or convulsive movement, and as this is noticed sometimes in the faces of persons suffering with neuralgia of that part, the term tic doloureux, or painful tic, was given to the affection.”

Neuralgia, or tic doloureux, often has its origin in *diseased teeth*, either from an exposed and irritated nerve, or from ulcerated teeth or roots. The disease is so peculiar that neuralgia of the face often appears to have no sympathising connection with the teeth. We have witnessed several cases, which we have had the satisfaction of relieving after having been treated as pure neuralgia for weeks. Again, an error may be committed on the other hand, and teeth that are valuable sacrificed without affording any relief. A proper knowledge of the case should be had before proceeding to treat the disease.

When neuralgia of the face exists a thorough examination of the teeth is necessary. *All roots, or parts of teeth should be removed, whether they appear to be the cause of the trouble or not.* We have witnessed several very aggravated cases of neuralgia caused by roots of teeth, when the individuals have insisted that these roots had no

connection whatever with the disease, and opposed very strongly their being extracted.

To use their own language, (for most express themselves in the same manner,) "I do not wish to have those roots removed, they never gave me any trouble, and are very useful; they are as firm as any teeth I have in my head; I cannot see what connection they have with the pain." After being urged, they have replied: "Well, have your own way, take them out, but I do not believe it will do any good." We have never witnessed a case where extracting such roots or teeth did not afford relief.

We will illustrate the subject by a case or two.

We were called, some time in the fall of 1849, to see a Miss who was suffering from neuralgia of the face; her father called and inquired if we could treat neuralgia? We answered that it depended upon the cause whether we could or not. We told him we should like to see the patient; he bade us to come along as fast as possible (using some strong expression,) as he feared his child might "go crazy." We immediately accompanied him to his home. The sufferer was in bed; the paroxysms of pain were not then on. We inquired as to the situation of the pain, and

suspected at once that the teeth might be the cause. On examining them our suspicion was confirmed. We designated the teeth that should be extracted, and having given a few directions to palliate the disease, we stated that we would call in the afternoon and extract the teeth. The father, not knowing that we were a dentist by profession, in the meantime called in one of the physicians who had charge of the case, and who had been treating it for four weeks mostly as pure neuralgia. The physician attempted, but did not succeed, in extracting the teeth. When we called at the time appointed we found the case as above stated, and extracted them. Called next morning to see the patient, found her free from pain, and amusing herself in making artificial flowers. Since that time she has not been troubled with neuralgia.

Case 2. We was sent for by a man who had been suffering from neuralgia facial for a week and upwards. He had been attended by a physician during the time, who was not successful in relieving him. On examining his mouth we found several roots of teeth, which we suspected and stated to be the cause. We advised their extraction. After we had extracted two or three the patient refused to have the others re-

moved, as he said they gave him no trouble, and were useful. We succeeded, however, in overcoming his objections, and removed two others, both of which were ulcerated at the roots, and which subsequently proved to be the aggravating cause, as he has not suffered from neuralgia since their extraction.

Case 3. A gentleman called upon us and inquired whether we could treat neuralgia; stated he had been directed to us. He said he had suffered, for over two weeks, all but death, not having slept scarcely an hour during the time, and if he was not soon relieved he could not stand it much longer, as he was entirely exhausted by the intensity of his sufferings, and want of proper rest and nourishment. From his personal or bodily appearance, we concluded that it was not a case of pure neuralgia, and accordingly proceeded to examine his teeth to find, if possible, the exciting cause.

After examining his teeth for some moments we were on the point of deciding against our previous opinion, when, on a farther and more careful examination, we discovered a small cavity in the left superior wisdom tooth; on touching that point he exclaimed, "what's that, you have made it worse!" We told him we had found a

cavity in the tooth, and we thought the trouble arose from that. He said he did not know that there was a cavity in his teeth. On again applying a probe to it he was convinced that it was the case. We treated the tooth, (as he did not wish to have it extracted,) and made an application over the tracks of the sympathising nerves, which so relieved his sufferings that he sank into a quiet doze, and remained thus for nearly two hours, when he started up and exclaimed, "Can this be possible! I am afraid it is not real! the pain will return!" &c. Far as we know, however, he has not suffered since from neuralgia. This gentleman subsequently stated to us that he had consulted two physicians, who thought it was owing to some morbid state of his system, arising from previous disease, and believed no direct relief could be obtained.

These illustrations serve to show that the true cause of this disease may be overlooked, even by skillful physicians, who have not had their attention directed to it.

We might multiply such cases, but these may suffice.

By reference to the plate the reader can readily trace the principal nerves connected with the teeth, and thus gain some idea of these nervous affections.



## CHAPTER XII.

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### ALVEOLAR ABSCESS, OR ULCERATED TEETH.

This disease of the teeth being of common occurrence, we think it proper to make some remarks on it.

The terms most commonly used to designate this disease are "*gum bile*," and "ulcerated teeth." Both of these appellatives are incorrect, as the disease has its origin in the lining membrane, called the periosteum of the the alveolar cavity, or the socket in which the teeth grow.

As the disease originated in the alveolar process, Mr. Bell has given it the name of "*alveolar abscess*," which appears to be its most appropriate name.

This very common disease is often productive of much suffering; its effects are not limited to

the teeth, but the surrounding parts are usually involved in it. The constitutional health often suffers, and, from the course the disease takes, it is frequently the case that the face becomes scarred and disfigured.

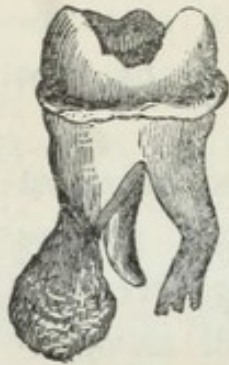
Dr. Harris remarks that "the first effect produced by inflammation of the periosteum of the root, or that of the alveolar cavity, is an effusion of the coagulable lymph, which soon becomes hardened, and attaches itself to the root around its apex.

"In this manner a sack is formed which, at supperation, continues, distends and presses against the walls of the surrounding alveolars, and causes them to be destroyed until an opening is made through the socket and gums for the escape of the matter.

"This is the route which the matter most frequently makes in its escape, but sometimes an opening is made through the roof of the mouth, the cheek or face, through which it escapes; at other times it traverses the jaw for a considerable distance, divesting it of its periosteum, and causing necrosis and exfoliation; and it not unfrequently happens that it is discharged into the maxillary sinus.

The formation of an abscess in the alveolus

of a *dens sapientæ*, (or what is commonly called the *wisdom teeth*) of the lower jaw, is not unfrequently accompanied by inflammation and swelling of the tonsils and glands, so as almost to prevent deglutition. The inflammation extends to the muscles of the cheeks and eyes, causing them to become so rigid as to prevent the mouth from being opened."



The disease commences in the lining membrane of the cavity, at the apex of the root of the tooth, as illustrated by the accompanying engraving. The forming matter being confined within bony walls, meets with obstructions which are often difficult to be overcome, and, if proper care be not exercised, unpleasant and serious trouble may result. The trouble arising from this disease is often inadvertently aggravated. Wishing to alleviate the suffering the persons thus afflicted, of their own accord, or by the advice of others, apply warm fomentations or poultices to the face; these fomentations or poultices in many other cases might be productive of good, but, when applied to the face in this disease, they often seriously aggravate it, by

softening, and causing the blood to concentrate in the parts where they are applied, thereby the puss finding an outlet which otherwise might have taken some other and more natural course, or have been allowed to escape by lancing the gums.

From the experience of others, and from our own observation, we think it unadvisable to apply fomentations or poultices in this disease.

Dr. C. A. Harris advises the early extracting of the tooth, and remarks: "Many, however, object to this practice, supposing that it is dangerous to extract a tooth when the gums around are inflamed and swollen. But a tooth may be removed with as much impunity at such a time as at any other.

When the tooth occupying the affected alveolus is extracted, the sack formed by the disease generally comes away with it, and thus the formation of an opening for the escape of the confined matter is at once prevented."

We might mention several cases of this disease that have come under our observation, where great physical suffering has been caused, and where the features have been scarred and disfigured for life.

We will give two or three cases, briefly describing them.

Case 1. Miss R——, of Providence, was troubled with diseased teeth and roots in the superior jaw of the left side; she endured the painful suffering for some time, and deferred, as many persons thus situated usually do, to have the offending teeth and roots extracted. To mitigate the pain warm fomentations were applied to the face, which brought the disease to the extreme surface, just below the eye; there an ulcer was formed, which soon required lancing. After a course of treatment the disease was cured, but an unsightly scar disfigured her face.

Case 2. Mr. ——, of Providence, about 35 years old, quite large in stature, came into our office, much wasted in flesh, and in a feeble state of health. He stated that he had been suffering several weeks from a diseased tooth. The tooth was the second molar, situated on the lower jaw, left side; the accumulated matter had made for itself an opening through the face just at the angle of the jaw. During the time the muscles had been so much swollen as to prevent his opening his mouth; all the nourishment he could take was in a liquid state, and was sucked between the teeth. Speaking of the suffering he had borne from it, he said if he had known that

he was was to have suffered so much from the tooth at the commencement of the disease, he had much rather have died than endured it, and would be tempted to destroy his life rather than to suffer again in like manner. We extracted his tooth, and he was soon relieved.

Case 3. Mr. P——, a young man of the city of Providence, suffered from an abscess forming at the apex of a carious inferior molar tooth. Fomentations were applied, and the puss found an outlet through the face; Two or three passages were formed, which opened on the under surface of the lower jaw, and for two or three months these openings were discharging an unhealthy secretion, causing great suffering and annoyance. During the time the disease had been under treatment, but the diseased tooth, which was the exciting cause, being suffered to remain, no cure could be effected until after it had been extracted.

Dr. Fitch, in his Dental Surgery, remarks that “people very often continue poulticing a swelling of this kind in order, as they term it, to bring it to a head; in so doing they cause ulceration to take place through the substance of the cheek. If the tooth producing the abscess be situated in the upper jaw, it will discharge in

the middle of the cheek ; if in the lower jaw, the opening will be at the lower part of the jaw, either near the angle, or at the edge of its base.

“ These abscesses are rarely healed ! the painful symptoms may subside, but the opening remains fistulous, (*a deep, narrow, sinuous ulcer,*) attended with a consequent discharge of matter.

“ I have known persons to continue several months in their attempt to heal these kind of abscesses. One lady continued the application of dressings and lotions to a sore of this kind for two years, but with no benefit.”

Dr. Fitch, remarking on the influence the presence of the diseased tooth has on the general diseases, says: “ When, unfortunately, the patient is so much under the the influence of fear that neither acute pain nor protracted suffering is sufficient to induce submission to the extraction of the tooth, the inflammation of the jaw-bone is often so great as to terminate in the mortification of a large portion of its substance.”

We give the case of a young lady, a patient of Mr. Williams, in the Borough of Southwark:

“ This lady was tormented with the toothache for a long period ; her face swelled and matter formed, but all the entreaties of Mr. Williams, and the dreadful consequences which he taught

her to expect, could not arouse in her mind sufficient courage to permit the tooth to be extracted. The consequence was that a large piece of the jaw mortified, the bicuspidæ, in consequence of their attachment to the bone, being destroyed by ulcerative process, became loose, and, being single fanged teeth, were easily taken away; at length the piece of bone was so completely detached as to allow of its removal, bringing away with it the diseased tooth; at this time the second molar, having lost almost the whole of its support, was found to be so loose as to render it necessary to be extracted. Here is an instance where a person lost four teeth, and a large portion of the jaw, through an obstinate determination of not submitting to the extraction of the original diseased tooth."

The following case is mentioned by Dr. Koecker, (of London) formerly of the United States:

Case 24. "Mrs. K——, of Philadelphia, a lady about 28 years of age, had been suffering some time from an abscess under the chin, on the left side. Being ignorant of the nature of the disease, she sought no surgical aid, under a hope that it would get well itself; but it grew worse, and was attended with a constant dis-



charge of fetid puss, with great pain in the jaw and mouth, extending as far as the ear. These symptoms at last became so violent as to produce general disorder and fever. At this time Dr. Physick was consulted, who, having discovered the maxillary to be a fistulous abscess, passing through the under maxillary cavity and bone, immediately suspected that the teeth were the cause of it, and desired that I should be consulted. On examination I found that three large grinders, on the side affected, had been so completely carried away by decay, that the parts of the roots remaining were entirely covered by the gums, which were greatly inflamed.

1819, October 8, these roots, six in number, were extracted, and, so effectual was the relief obtained from this operation, that in a very short time the patient perfectly recovered."

Persons having badly decayed teeth, or roots of teeth, remaining in the mouth, should be warned of their deleterious influence upon the system. Fear of momentary pain should not deter any one from having such diseased teeth and roots removed at once.

We might extend this subject much further, and multiply cases; we think, however, that enough has been already said to enlighten the reader on this subject.

## CHAPTER XIII.

## SALIVARY CALCULUS, OR TARTAR.

\* " If sloth or negligence the task forbear,  
Of making cleanliness a daily care ;  
If fresh ablution, with the morning sun,  
Be quite forborne or negligently done,  
In dark disguise insidious tartar comes,  
Incrusts the teeth and irritates the gums,  
Till vile deformity usurps the seat,  
Where smiles should play and winning graces meet ;  
And foul disease pollutes the fair domain,  
Where health and purity should ever reign."

This deposit of foreign matter upon the teeth is common to almost every person ; the casual observer can detect it in cases too numerous.

Where this formation is visible we consider it a mark of neglect of proper attention to the teeth ; for, where scrupulous care of these organs is observed, the presence of this disgusting and unhealthy formation cannot be found. We have already very fully written on the deleterious ef-

\* Dr. S. Brown's Dentologia.

fects of neglect on the teeth, and the presence of tartar is but one of its numerous marks.

This formation is secreted or deposited from the saliva, and is found adhering to different parts of the dental arch. It is found in larger quantities on the teeth opposite the ducts that discharge the saliva into the mouth, on the superior molar teeth, and on the external and internal surfaces of the lower front teeth; it is in the last mentioned place that its injurious effects are more noticeable.

Dr. C. A. Harris remarks :

“ From all the light that has been thrown upon this subject, the conclusion that this earthy matter is a salivary production, to me, appears irresistible, and the following seems to be the manner of its formation :

“ It is precipitated from the saliva as this fluid enters the mouth, on the surface of the teeth, opposite the openings into the ducts from which it is poured. To these its particles become agglutinated by a mucus that is always found in greater or less quantity upon them. Particle after particle is afterward deposited, until it sometimes accumulates in such quantities that nearly all the organs are almost entirely enveloped in it. It is always, however, found in greatest abund-

ance on the outer surface of the superior molars and the inner surface of the inferior incisors, and it is opposite to these that the mouths of the salivary ducts open."

This substance, when suffered to form upon the teeth, exerts an influence that few persons appear conscious of; its morbid effects are noticeable by its irritating and poisonous influence upon the gums, causing them to inflame and to become greatly distended, so as often to cover the crowns of the teeth; the gums, when thus diseased, will be spongy and bleed from the slightest cause. The process, or bone the teeth grow in, becomes diseased and wastes, thereby causing the teeth to loosen and drop out. Its acrid effects are noticeable likewise upon the teeth, often causing their rapid decay.

Dr. C. A. Harris has given the most faithful description of the evil effects arising from the presence of tartar on the teeth. We cannot in any way better enlighten the reader on this subject than by presenting his views.

He remarks :

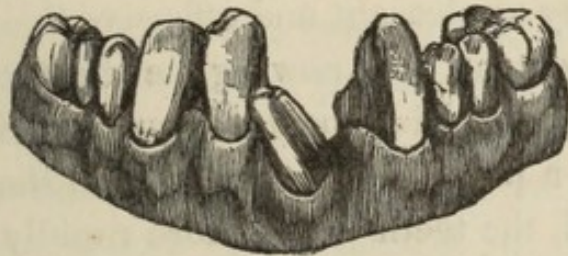
"The results of the presence of this substance upon the teeth are always pernicious, though sometimes more than at others. An altered condition of the fluids of the mouth, diseased

gums, and not unfrequently the gradual destruction of the alveolar processes, and the loosening and loss of the teeth, are among the consequences that result from it. But, besides these, other effects are sometimes experienced by it; among which may be enumerated, tumors and spongy excrescences of the gums, of various kinds; necrosis and exfoliation of the alveolar processes and portions of the maxillary bones, hemorrhages of the gums, anorexia and derangement of the whole digestive apparatus; foul breath, catarrh, cough, diarrhoea, diseases of various kinds in the maxillary antrum and nose, pain in the ear, headache, melancholy, hypochondriasis, &c. The character of the effects, both local and constitutional, produced by it, depends upon the quality and consistence of the tartar, the temperament of the individual and the state of the general health; the two former of these are determined by the two latter, and the attention that is paid to the cleanliness of the teeth. If this last be properly attended to, salivary calculus, no matter how great the constitutional tendency to its production may be, will not collect upon the teeth. The importance, therefore, of its constant observance cannot be too strongly impressed upon the minds of our readers, especially of those upon whose teeth tartar is easily deposited.

“The teeth and their contiguous parts suffer more from accumulations of this substance than from almost any other cause. Caries are not much more destructive to them.

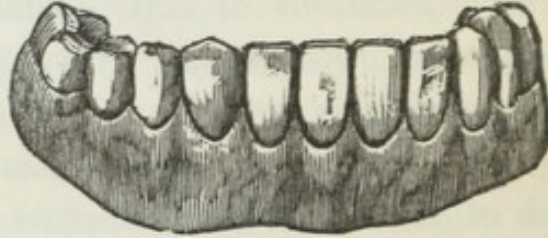
“When it is permitted to accumulate for any great length of time, the gums become so morbidly sensitive that a tooth brush cannot be used without producing great pain; consequently the cleanliness of the mouth is not attempted, and thus, no means being taken to prevent its formation, it accumulates with increased rapidity, until the teeth, one after another, and in quick succession, fall victims to its desolating ravages.

No. 1



The engraving No. 1, is a representation of the front teeth and gums of the lower jaw, (taken of a patient's mouth by the author,) as affected by this unhealthy and corroding formation, tartar. Two teeth have already been destroyed from a loss of the gums and bony process. A third tooth, it will be noticed, has fallen from its position, and will soon drop out. It will be seen, likewise, that the gums have receded from the remaining front teeth, which leaves them in an unnatural and unhealthy condition.

No. 2.



Contrasted with engraving No. 1, we have represented, in engraving No. 2, the front teeth of the lower jaw in a healthy condition, (likewise a model from the mouth.) It will be noticed that the gums are regularly formed around the neck of each tooth. They present an entirely different appearance. Be warned! do not suffer the loss of these valuable organs from neglect.

“It sometimes not only undermines the soundest constitutions, by occasioning discharges of fetid matter from the gums, and corrupting the juices of the mouth, but also renders the breath exceedingly unpleasant and offensive.”

Some persons, not knowing the effect of tartar upon the teeth and gums, have contended that it possessed a preservative quality, and that, were it removed, the teeth would more rapidly decay. A person could not labor under a greater error in regard to this formation.

The following facts, from the “*American Annual of Scientific Discovery*,” should be carefully considered. They should be the means of stimulating every individual to a scrupulous cleanliness of the teeth.

“ At a meeting of the American Academy, December, 1845, a paper was read by Dr. H. J. Bowditch on animal and vegetable parasites infesting teeth, with the effects of different agents in causing their removal and destruction. Microscopical examinations had been made of the matter deposited on the teeth and gums of more than forty individuals, selected from all classes of society, in every variety of bodily condition; and in nearly every case animal and vegetable parasites in great numbers had been discovered. Of the animal parasites there were three or four species, and of the vegetable one or two. In fact the only persons whose mouths were found to be completely free from them cleansed their teeth four times daily, using soap once. One or two of these individuals also passed a thread between the teeth to cleanse them more effectually. In all cases the number of the parasites was greater in proportion to the neglect of cleanliness. The effect of the application of various agents was also noticed. Tobacco juice and smoke did not impair their vitality in the least. The same was also true of the chlorine tooth wash, of pulverized bark, of soda, ammonia, and various other popular detergents. The application of soap, however, appeared to destroy them instantly



We hence infer that this is the best and most proper specific for cleansing the teeth. In all cases where it has been tried, it receives unqualified commendation. It may also be proper to add, that none but the purest white soap, free from all discolorations, should be used."

## CHAPTER XIV.

THE INFLUENCE OF TOBACCO UPON THE  
TEETH.

As chewing and smoking of tobacco is practiced to a greater or less extent in every community, we need not apologize for introducing a few remarks upon this subject.

Inquiries are very common respecting the influence this weed exerts upon the teeth, and those who use it think it is in no way injurious to the teeth, but, on the contrary, possesses qualities of a preservative nature. It is not surprising that individuals using tobacco should wish to claim for it some virtue; palliative arguments are adduced to sustain most of the habits with which mankind are burdened, and the use of tobacco is not an exception.

It is not our design to discuss the influence of tobacco on the general health, the nervous system or digestive organs; those points belong to another division of physiology.

We have never seen a positive assertion that the destruction of the teeth, by decay, was hastened from using tobacco. Its influence is negative, it is not positively injurious, nor can it be said to be beneficial. Tobacco, we have thought, tended to neutralize the influence of acrid formations upon the teeth, by increasing the flow of saliva, and the friction caused by chewing. Particles of matter, which might foment and become injurious, are thus removed.

There are gritty particles in tobacco, however, which wear away the teeth by the grinding motion of the jaws. It is evident from the appearance of the teeth of those using tobacco that it is endowed with coloring properties.

Tobacco has a more direct influence upon the gums, causing them to inflame, sometimes so much so as to become troublesome, producing a chronic inflammation.

The most injurious form in which tobacco can be used is in a powdered state, as snuff; the practice of using snuff as a dentifrice is not uncommon, we have seen strong advocates for its use, among females especially.

Dr. C. A. Harris remarks: "Within the last few years snuff has in some parts of the country become quite popular as a dentifrice, particularly

with females. The teeth suffer more from the use of tobacco in this form than in any other. Being reduced to a powder, its fine particles find a more easy lodgment beneath the edges of the gums, around the necks of the teeth, in their interstices, and various indentations and fissures than when taken into the mouth in any other form. These particles not only thus serve as a nucleus, around which the thickened and vitiated secretions of the mouth gather, but also, from their stimulating properties, and their long retention beneath the edges of the gums and in the crevices of the teeth, are productive of much irritation, both to the gums and dental periosteum.

I have observed that the gums of persons who have used snuff as a dentifrice, for a length of time, usually have a dark purple and sometimes a yellowish appearance; are soft and spongy, more or less isolated from the teeth, and that the teeth themselves are not unfrequently very much loosened. In fact, I do not recollect of ever having known the instance of an individual who used tobacco in this way two or three times a day, for several years, without the teeth and gums being thus affected. In some cases, however, it is much longer in producing

these deleterious effects than in others. Much depends upon the condition of the gums at the time its use is commenced. If they be healthy, and adhere to the necks of the teeth, it may be employed for a considerable time without being attended with any very obvious injury; but, if they are at all diseased, a deleterious effect will soon be manifested. Taking this view of the subject, and believing the opinion I have here advanced to be supported by the observation of every one whose attention has been at all directed to the subject, I cannot but condemn the use of this article as a dentifrice, and recommend to every dentist to caution, particularly, persons consulting him, and especially females, against thus employing an article that is productive of such pernicious consequences to the teeth. Its effects upon the general health are not less injurious. Persons who use snuff in this manner are generally observed to have a pale, sallow countenance, especially if their constitutional health be at all delicate."

The reasons against the use of snuff as a dentifrice, given by Dr. Harris, are sufficient, we doubt not, to deter any individual from the use of it. The common use of tobacco in any form cannot be beneficial, and is, most certainly, repulsive to those not accustomed to its use.

## CHAPTER XV.

## TOOTHACHE—SEVERAL REMEDIES.

“ My curse upon your venomed stang,  
That sports my tortured gums alang,  
And through my lugs gi'es money a twang,  
    Wi' groaning vengeance ;  
Tearing my nerves wi' bitter pang,  
    Like racking engines.

When fevers burn, or ague freezes,  
Rheumatics gnaw, or cholic squeezes,  
Our neighbor's sympathy may ease us,  
    Wi' pitying moan ;  
But thou—the hell o' a' diseases,  
    Ay mocks our groan.

Where 'er the place the priests ca' hell,  
Whence a' the tones o' misery yell,  
And rankst plagues their numbers tell,  
    In dreadful raw ;  
Thou toothache surely bearest the bell  
    Among them a'.”

The tormenting, sickening, *maddening* pain of toothache can be better understood by experience than explanation. It seems to jar and disorganize the whole system, making the gentle ferocious, and the naturally turbid disposition still more irascible and severe. It unfits both body and mind for all or any of the common duties of life. We have seen persons suffering from the toothache act more like maniacs than otherwise, tearing from themselves their clothes, and calling for some weapon or agent of destruction to terminate existence.

The poet Burns, in the preceding verses, has strongly expressed himself in regard to this pain. The intense pain of the toothache will not be so much a wonder if we examine for a moment the construction of the organ. The vitality of the tooth lies mostly in the pulp, which is ramified by an artery, vein and nerve. These are enclosed within a bony cavity, which they perfectly fill when in a healthy state. Should inflammation be induced by any cause from the exposure of the pulp, or any morbid action in the system, an enlargement or swelling of the pulp would be the consequence. There being no possibility of the parts expanding, the small blood vessels become distended, and the fine nervous

filaments compressed; the more the blood vessels become distended the greater the compression, and, as a natural result, the more agonizing will be the pain. Any excitement of the heart and arteries at this time will likewise aggravate the disease. The pain usually is more severe at night, especially if the person be in a recumbent position; an erect position usually lessens the force of the circulation of the blood in the parts; the nervous system, likewise, is laboring under greater excitement at this time, after the usual exercise and business of the day.

Dr. Togg's remarks upon the sympathetic influences of toothache we commend to our readers.

“The nervous connections of the teeth are so numerous and so extensive, that we need not be surprised at the wide range of their sympathies. The fifth nerve supplying the whole face and all the organs of the senses, brings them in relation with the entire head. Besides this, they have special connections with many of the more important organs of the head. Meckel's ganglion, (knot of nerves) and its branches, forming a sort of sympathetic centre for the entire head, is directly connected with the superior maxillary nerve, just as it is about passing into the infra-



orbital canal for the supply of the upper teeth. With the ear they are still more intimately connected through the otic ganglion, which rests upon the inferior maxillary nerve at its exit from the foramen ovale. This union will explain the extreme frequency of ear-ache in children at the period of second dentition, and the toothache which sometimes attends it. The same ganglion, by means of the tympanic plexus which is so directly connected with it, brings them in relation to the glosso pharyngeal and the pneumogastric, (lung and stomach) nerves, and so establishes a sympathy between these organs and the whole of the upper portion of the alimentary canal, and with the lungs. Through the sympathetic system the connections are indefinitely extended.

“ With the spinal cord they have not only the union through the origin of the fifth nerve with the spinal bulbs, but also through the numerous filaments of the sympathetic, which are connected with the spinal nerves. Thus we find that, through this intricate web of sensory filaments, *the teeth are directly* or indirectly connected with every organ in the system.

“ During certain conditions of the system, therefore, it is not surprising that these sympathetics

should be roused to undue activity. Many diseases have the power of inordinately exciting nerves remote from the organ affected. The various disturbances of the alimentary canal are remarkable for this peculiarity. The anatomical connection between the stomach and bowels, and the teeth already glanced at, sufficiently prepares us to expect toothache as an occasional accompaniment of the disorder of the apparatus of alimentation."

Some persons suffer much more from the same causes, owing to a difference of temperament.

The writer last quoted, remarks on this subject:

"Nervous and sanguine persons suffer more from the same morbid change than the lymphatic and the bilious. What is the most intolerable anguish to one, is not much more than uneasiness to another."

As toothache is a disease so very common and troublesome, we have thought it advisable to place before the reader such treatment as has fallen under our notice. It may not be convenient at all times to apply to a dentist, and in fact not always necessary, and great suffering might be saved by some timely hints. Extraction is too commonly resorted to for relief ; many

valuable teeth are sacrificed by the dexterous use of the forceps, as less consideration and information in regard to the proper treatment of the diseases of the teeth is necessary to the application of them.

The following remarks are often verified.

“No pain is more intolerable, none meets with less sympathy, yet none has fallen more under the care of charlatans and quacks. This has partly been caused by the ignorance and thoughtlessness of patients themselves. Being unacquainted with the various peculiarities of pain in the teeth, and knowing only that they suffer, they run to the first “tooth puller” who will, without examination or question, jerk out or break off teeth which might have been serviceable for years.

“Ignorance in the patient never justifies imposition in the operator; but, that the latter is frequently the consequence of the former, the unhappy experience of many victims furnish ample and palpable testimony. To avoid the wholesale sacrifice of teeth it is essential that the dentist clearly understands the local and sympathetic causes of pain, as in toothache produced by cold or rheumatic affections; the extraction of a tooth is as often unwise as the ex-

traction of an eye would be under similar circumstances."

To remove or alleviate disease, we should first inform ourselves of the primary cause, as, upon the removal of this will depend, in a great measure, the successful treatment of the disease itself. When the toothache arises from some morbid or sympathetic cause, as is often the case when we find several teeth troublesome at the same time, and it being hard to determine the precise tooth, the most effectual treatment in such cases will be to take a portion of cathartic medicine, say rheubarb, in the powder, or some similar medicine, and, in connection, a warm foot bath a short time before retiring at night. These means will free the alimentary canal from any irritating matter, and reduce the flow of blood from the head. This treatment is often very efficacious. The pain of toothache is more aggravated when the system is laboring under a cold; at such times applications to the troublesome part can produce but little effect until the primary cause is removed; therefore let it be the endeavor first to remove the effects of the cold from the system, and the aching of the tooth will subside, unless the nerve or pulp cavity of the tooth is exposed,

and there appear to be severe inflammation existing; in such cases the most efficient treatment will be to have the offending organ removed, unless it be a front tooth, which may in some instances be preserved so as to be useful.

It is difficult to place before the reader the various treatments instituted for this disease. We would remark that much of the treatment and many of the agents employed in a domestic manner to alleviate toothache are often productive of great injury; the applications are so varied and numerous that it would be difficult to specify,—from cold water to cayenne pepper, acids and ginger, cigars and chewing tobacco, opium and mustard, &c., &c., &c. These various heterogeneous remedies applied, it may be, all by the same individual, irritate the mouth, increase the flow of blood to the parts, and often produce severe inflammation in the gums. They weaken and destroy very much the value of the whole denture. One agent which is sometimes employed, (acid) will be sure to destroy the tooth to which it is applied, and injure all the contiguous teeth.

In treating the toothache where the nerve is exposed, the cavity should be carefully wiped out; all foreign matter should be removed before

any application is made, as this is often the cause of the irritation. Any of the following agents, if at hand, may be put into the cavity on a small lock of cotton: spirits of camphor, sulphuric ether, chloriform, laudanum, or any similar soothing application. Kreosote, if used at all, should be used with great care, for a very small quantity getting into the fauces might produce severe inflammation. Such cases we have known to destroy life.

“If the toothache is unusually violent on going to bed at night, a fomentation of the head, or part affected, with warm flannels steeped in a decoction of chamomile flowers, in which two or three poppy heads have been boiled, is an excellent application. It may be continued for about twenty minutes.”

A fomentation of hops and vinegar, applied to the parts warm, is also very good. No drawing fomentation should be applied, such as mustard, ginger, or any of the common applications for poultices; for, should the tooth be in an ulcerating condition, they might produce serious harm, (as noticed under the head alveolar abscess.)

The following are some of the means employed to allay this distressing pain:

## BOTANIC CURE.

“Place the feet in warm water, and take freely of composition or pepper tea. In violent cases an emetic should be given, followed by broken doses of lobelia, stimulating teas and warm applications to the feet. A very intelligent and experienced Thompsonian once told me that he generally prescribed a dose of the *third preparation* of lobelia for toothache, and said it seldom failed of removing the pain.”—*Med. Bot.* p. 180.

## REFORMED PRACTICE.

“Tincture of capsicum is excellent for pain in and about the teeth. Apply it in the tooth between the lip and gums, and outside of the cheek. This is very effectual for ague in the face.”

“I have heard washing of the mouth and teeth twice a day with salt and water strongly recommended by a gentleman who had both experienced and observed much benefit from it. Also brushing the teeth with cold water and soot from wood ashes.”

“If habitually painful, clean out the teeth and drop in some oil of cloves, or powdered opium. If that fail, dip a splinter of any kind into nitric acid, insert it at the bottom of the tooth to destroy the nerve: it may have to be repeated.

*Great care* must be observed, that the acid do not get upon the other teeth or gums."—*Beach's Dom. Prac.* p. 771.

*The Homœopathic cure*, which was selected from one of their best authors, is as follows :

“ When the pain is severe, shooting and increasing in intensity in the evening, accompanied with swelling of the gums and cheeks, with aggravation of the pain while eating, &c., use *belladonna*. - *Chamomilla* is recommended in cases of toothache where great agitation, excessive weakness, irascibility, and disposition to shed tears during the paroxysms is felt. *Mercurius* is advised where the pain extends to the whole side of the head and face, extending to the ears, loosening of the teeth, and a feeling as if they were too long. It is particularly useful to persons who are subject to glandular swellings. *Nux vomica* is useful to persons who are habituated to *wine*, coffee, or other stimulants, and whose sufferings are increased by intellectual labor. Sulphur is valuable where, with toothache, there is a tendency to constipation ; *coffæ*, where there is violent pain, with great excitability, and almost distraction in adults, where the patient is conscious that the excitement is disproportionate to the pain suffered. *Aconite*,



*belladonna, chamomilla, coffæ, ignatia* and are useful in affections of this nature with children.

#### HYDROPATHIC REMEDY.

The following remedy is said to be efficacious, and was practiced by the followers of Priesnitz.

“Take two basins filled with water, one cold the other tepid; fill the mouth with the tepid, and retain it till it becomes warm, then change it; in the mean time the hands should be dipped constantly in the cold water, and the face and the parts behind the ears rubbed violently till the pain ceases. The gums should also be rubbed briskly, and, if they bleed, so much the better.”

## CHAPTER XVI.



## TO CHECK HEMORRHAGE, CAUSED BY EXTRACTING TEETH.

Hemorrhage, or a more than ordinary flow of blood, takes place sometimes from the extraction of teeth. The cases are rare, however, when it becomes serious; most usually the flow of blood is very easily checked. Instances occur, sometimes, where the bleeding from the socket of a tooth becomes excessive, owing mostly to a constitutional tendency to hemorrhage. It is induced, at other times by sucking, or drawing upon the socket, which keeps the artery open; this should always be avoided.

To check the flow of blood all that will be necessary, usually, is to place in the cavity a compress made by winding a piece of cotton into a pointed or cone-like form, sufficiently large to fill the socket; it should extend beyond the

socket, so that when the jaws are closed it may be compressed closely into the cavity. This compress should be saturated in some astringent or stimulating liquor; either of the following preparations may prove effectual: tincture of galls, solution of sulphate of copper, diluted mineral acids, sulphuric acid and alcohol, tincture of myrrh and galls in brandy, spirits of turpentine, nitrate of silver or caustic, sponge compressed into the socket; kreosote should be used with great care. We have known lint, made by scraping the inner surface of common tanned sole leather, compressed into the socket, prove very effectual in stopping the flow of blood. Much depends upon the compressing of the cotton, sponge, or any other agent into the cavity, keeping the jaws firmly closed sufficiently long to allow the blood to coagulate. A bandage may be passed under the chin and secured on top of the head, when there is much inclination to open the mouth.

## CHAPTER XVII.



## CLEANSING THE TEETH.

The different methods practiced by dentists (or persons calling themselves such,) for removing the tartar from the teeth, or cleansing them, should, we think, be noticed. The good or evil resulting from these operations may be direct or remote. The immediate or direct beneficial effects exerted upon the teeth, gums and sympathising parts are such, usually, as to repay four fold all labor thus expended; the teeth are freed from an injurious and corroding agent; the gums assume again their healthy action, and the air, the purity of which is so essential to a healthy circulation of the blood, is inhaled without contamination; in fact patients, and all who may be so situated as to receive the odor of the breath, perceive the grateful change.

These we conceive to be some of the legiti-

mate results arising from a thorough and efficient cleansing of the teeth.

There are evils, likewise to be noticed, resulting from these operations. These injurious consequences do not result from the faithful and *honest* performance of these operations, but from a practice at once dishonest, and one, we think, which calls for the most decided reproof.

We think when such is the known practice, the civil law should be invoked to punish the offender, and prevent injury being inflicted that cannot be fully repaired.

There are individuals who pass about from house to house with remedies, for which they claim the remarkable properties of cleansing the teeth almost instantaneously, without producing injury, having likewise the power of curing the toothache, it may be, in less time than is required to cleanse the teeth.

Individuals and families are often the subjects of vile impositions, and great injury is inflicted upon them from using these miraculous agents. We know of no such agent or chemical, of any description whatsoever, that possesses these wonderful properties. Be assured that such chemical or compound will result in serious injury to the teeth. Let not assurance to the contrary

deceive you into the imposition. Acid is often used as an agent in cleansing the teeth, or to remove the tartar from these organs. This is common practice with some individuals, and instances are not uncommon where sets of valuable teeth have thus been mutilated, and even destroyed.

We have noticed the result of this practice on the incisor and cuspid teeth more particularly, and have frequently seen these teeth so much decayed as to be beyond remedial treatment.

We have seen a young female of fifteen years of age, whose incisor and bicuspid teeth had been destroyed in one year by the application of acid to cleanse them. This *valuable* operation was performed by a dentist who advertised to "cleanse the teeth without scraping them."

This is by no means an isolated case; we have witnessed similar results from the use of diluted mineral acid, in cases of individuals in more advanced life.

We have referred to the remote effects of the improper treatment of the teeth; one case, which has recently come under our notice, will be sufficient to illustrate what we mean.

A lady visited our office to have several parts of teeth removed from either jaw, (her mouth

was nearly destitute of teeth.) After complying with her request, she remarked that she attributed the destruction of her teeth to a dentist who made use of acid in cleansing them. The teeth had crumbled away, and the sharp angles had irritated her mouth very much. She showed me her tongue, on the left side of which, very near the apex, was a formation about the size of a chestnut, its color and general appearance was that of a cancer. She said that the formation commenced soon after her teeth began to decay, and thought it arose from the irritation of her tongue against the sharp angles of the decayed teeth. Her views of the case appeared to us to be correct. What we wish to express by the remote effects of mal-practice in cleansing teeth is, we believe, fully illustrated by the last cited case. This person was suffering not from the loss of her teeth alone, but, in addition, she was tormented by this diseased formation upon her tongue, which may eventuate in the loss of her life.

If, in the preceding remarks, we have drawn a fair inference, what can be said of that individual who will thus tamper with the human system, who will thus mutilate these valuable organs, the teeth?

## CHAPTER XVIII.



## PRESERVATION OF THE TEETH BY FILLING.

The means commonly made use of to arrest the decay of the teeth are, filing and plugging. These operations, when properly performed, are of great value in preventing their rapid destruction.

The operation of filing and plugging the teeth is considered to be the most difficult of all dental services. A right performance of what is needed requires proper judgment, a *skillful*, as well as *careful* use of instruments, untiring patience and honest faithfulness.

Good judgment is requisite, and should be exercised in determining the true condition of the teeth requiring treatment. Many valuable teeth, we believe, have been sacrificed from not exercising honest and proper judgment. The



practice is too common, in cases where the teeth are so much decayed as to require more than ordinary time or care in filling them, to recommend their extraction, or to tell the person that their teeth are not worth filling. We will, in this connection, quote the remarks on this subject by Dr. Townsend, in an address delivered by that gentleman before the society of the Alumni of the Baltimore College of Dental Surgery :

“It is a short way to settle the probabilities about a diseased limb to sentence it to amputation; and the sacrifice of a diseased tooth may save some trouble, dispense with some science and skill which the operator does not possess, and give an opportunity for a display of china ware, though only a piece of porcelain actually looks like a human tooth. Nowhere are the temptations to careless, hurried practice greater than in the treatment of the teeth, and nowhere does it deserve severer reprobation. The dental surgeon should remember every time he extracts a tooth he acknowledges, against himself, or against his profession, or against both together, that he cannot cure, and therefore must mutilate. I repeat, it is the imperfection of our art that we must extract at all.

“It may be, indeed, in the very nature of things impossible, to avoid it in any conceivable

state of knowledge, still that necessity will ever stand a professional defect, and all progress, all real progress consists in diminishing that necessity. I am not ashamed of my workmanship, nor do I refuse the credit it gives me, but the man who will teach me how to save a tooth that I am obliged to sacrifice, is my master in the science of dentistry, without the proof of any other claim."

In connection with this subject Dr. Townsend adds: "And if we must needs indicate the specific department where the highest distinction is to be won, the profession would no doubt agree that it is in the filling of the teeth, and in the curative treatment of them."

The teeth are intimately connected with the physical health of every individual; no person should, therefore, heedlessly sacrifice, or cause the destruction of any tooth that might in any possible manner be preserved.

The latter remarks, refer not to those only who may be called to give advice in regard to the teeth, but to every individual possessing these organs.

A skillful and careful use of the various instruments used by the dental surgeon, in filling teeth, is requisite to success. The preparation

of the tooth for filling often demands great care ; especially is it the case when operating on those teeth where the pulp of the tooth has been nearly exposed by decay. The unguarded use of the instrument, in such a case, might endanger the vitality of the tooth. There are other teeth that are frail in their structure, and may easily be broken, so as to make them valueless. What we wish more particularly to refer to, however, in the careful use of the instruments, is the guarding of them so that they shall not slip and wound the mouth. There have been serious cases of this character ; great suffering has been caused, and the face badly disfigured by want of care in this respect.

Dr. Townsend, in his address before alluded to, remarks : " Every branch of surgery that requires instrumental treatment, whether it be taking up an artery, amputating a limb, or filling or extracting a tooth, depends upon manual dexterity, which can be had only on the terms of a thorough practical training ; and no man can be tolerated in our profession without such a skill of fingers, and facility and precision of manipulation.

We have referred to patience as being a necessary quality of the dentist. This commodity

will be often found very essential in the department of dentistry of which we are now treating. We frequently find it the case that the patient's teeth are of that sensitive description that the slightest touch of the instrument will cause them to shrink from the operation; in such cases a kind and patient manner will secure confidence, and enlist the patient's efforts to advance the operation.

One of the most important characteristics that should mark a dentist is honest faithfulness. In no department of the profession can more deception and dishonesty be practiced, without being detected, than in filling teeth. Want of faithfulness may arise from two causes, from the want of correct knowledge, and from too great haste.

Dr. Townsend remarks as follows :

“Now permit me to say, that fidelity to the trust imposed in the practitioner by the patient carries with it an obligation so high, and so sacred, and so obvious too, that argument could only weaken and obscure it. As a matter of morality and professional honor, therefore, I let it rest on its own simple statement.”

In connection with the subject of filling teeth, it would seem proper that we should make a few remarks on the materials used for that purpose.

The following named are some of the materials used for filling teeth : Silver, lead, tin, gum mastic, tin and lead, an alloy of bismuth, an amalgam of mercury and silver, platina and gold. Tin answers a very good purpose, in many cases, when properly prepared. When the tooth has been prepared for filling in a careful manner tin, if it be well inserted and faithfully condensed, will, in some people's mouths, secure the organ from decay for some time. Should the fluids of the mouth be vitiated, or should they eventually become so, the fillings would corrode or oxydize and turn black ; in such cases it promotes rather than retards the disease.

Lead is not so good for filling teeth as tin ; it is more easily effected by the fluids of the mouth, and portions of it are liable to be carried into the system, causing serious trouble.

Gum mastic, silver and the other preparations mentioned, with the exception of amalgam of mercury and silver, are not now so commonly used.

The amalgam of mercury and silver, or mineral cement, as it is often called, is a very injurious compound.

Dr. C. A. Harris, remarking upon this subject, says

“It (cement) is decidedly the most pernicious material that has ever been employed for filling teeth. It not only readily oxydizes in the mouth, turning the teeth black, and hastening rather than preventing their destruction, but it also, when used in any considerable quantity, exerts a deleterious effect upon the alveolar dental membrane, gums, and all the parts of the mouth. The author has a case, at this time under treatment, of a young lady about sixteen years of age, who is suffering from chronic inflammation of the alveolar dental periosteum of nearly half of her teeth, gums and mucus membrane of her mouth, caused by three large fillings of Lethodeon in her molar teeth. Two of the teeth thus filled he has already had to extract, and he is fearful that the removal of the third will become necessary.

“Some have endeavored to obviate the objection to this amalgam by using silver perfectly purified, but it matters not how pure the silver may be, the material will be equally deleterious in its effects; nor would pure gold and quicksilver be any better. It is the mercury that does the injury, and it matters not, therefore, how pure or what the other material may be that is employed with it for the formation of amalgam.”

We think there is but one opinion among well instructed dentists in regard to what material is best adapted to this purpose. We think by far the larger majority of dentists would, without hesitation, decide that gold stood pre-eminent as a material for filling carious teeth. Gold, from its peculiar qualities, cannot be excelled. Its malleability and toughness, when properly prepared, are two of its valuable qualities. Another is its purity, not being acted on by the fluids of the mouth, producing no unpleasant or unhealthy action upon the system, and securing (when used with proper skill) the tooth from destruction many years.

There is one species of fraud in filling teeth to which I wish to refer; it is the practice of employing two metals in filling one cavity. This is done by first inserting a quantity of tin, and covering it with a layer of gold. This practice is usually adopted by persons who fill at low prices; knowing that the filling of the tooth with gold will cost more than they demand, they deceive the patient by this fraud, causing them to believe that the tooth is filled with gold. The deception or fraud is not the worst feature of the case. There often arises in the tooth, and surrounding parts, a very annoying sensation. This

sensation is produced by the action of the two metals, causing an electrical or galvanic current. We have read of several cases where the pain was very great, the cause not being known until, removing the filling, it was discovered that the teeth had been filled with tin and gold.

A friend of ours once stated that he saw a dentist performing this operation. He enquired why he used the two metals; the dentist's reply was, "the cavity is so large I cannot afford to fill it with gold for"—the price being named.

These few hints have been thrown out that patients may be properly advised on the subject of filling teeth.



## CHAPTER XIX.

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### DIRECTIONS FOR THE CARE OF THE TEETH.

#### *Use of Brushes.*

The brush should be selected, in form and consistency, to answer the desired object. Should we select for a child, we would regard the size as well as the firmness of the brussels; a brush between a hard and a soft will usually be best. Grown persons would select according to their judgment; the same rules are usually applicable to the adult as to the child, Should the gums be sensitive a soft brush would be better suited to the case. Whatever brush may be used, it should be done effectually, not passing it directly cross-wise, but moving it up and down on the teeth, so as to remove any formation between them, and to bring it in contact with those parts that the brush, in being moved across, may

not reach. The grinding as well as the lingual surfaces should receive as much attention as the anterior surfaces. Floss silk, passed between the interstices, will remove any foreign matter, and tend to keep them clean and polished, and may guard them from decay; the brush cannot reach this part of the tooth. Decay oftener comes here than in any other part.

The teeth should be cleansed *four times every day*: in the morning before and after breakfast, after dinner, and, very certainly, the last thing before retiring at night. This is an important time, as the particles of food or any foreign matter, if not removed but remaining on the teeth during the hours of sleep, from the heat and moisture of the mouth become fomented and acrid, and act as a powerful chemical agent. By keeping the teeth literally clean, their liability to decay will be much diminished.

#### *Tooth Picks.*

These are very useful agents in assisting to keep the teeth free from foreign matter. Care, however, should be observed in the selection as well as in the description. Many descriptions of tooth picks are injurious to the gums, likewise to the teeth. Those made from metallic substances, such as gold, silver, and likewise those of bone

irritate and cause the gums to bleed, injuring their healthy action, exposing the necks of the teeth, allowing unhealthy and corroding secretions to act upon them, and causing them to loosen. Those productive of the least harm are formed from young goose quills; these are flexible, and answer every purpose.

The cracking of nuts, or biting of any very hard substances with the teeth, is very injurious to them. The enamel is fractured in many instances, which lays the foundation for the future destruction of the teeth. When the teeth are long and weak, they are liable to be strained. Ladies should never use their teeth as substitutes for scissors, as the vitality of them is often destroyed in this way; they are liable likewise to be fractured, which may cause their rapid destruction.

The teeth should not be exposed to alternate heat and cold, as sudden transitions endanger their vitality. The alternate use of hot and cold drinks is pernicious; smoking of tobacco likewise; the teeth become heated by the smoke coming in contact with them, and then, being exposed to a current of cold air, inflammation in this way is often induced, and their pulps become diseased, which may result in destruction of the

tooth particularly if they are of a frail description.

The excessive use of mineral waters also produces bad effects.\* Sweetmeats or candies, if much used, form an acrid or acidulated matter between the teeth, which is the primary cause of decay. The sweet we do not consider injurious to the teeth, it is the chemical change which takes place by fomentation, producing an acrid formation. Literal cleanliness at *all* times will obviate this difficulty.

## CHAPTER XX.

## DENTIFRICES.

This is a subject of great importance, as the agents presented to public notice for cleansing the teeth are very numerous. Many valuable teeth are made subject to destruction by a too free use of improper and deleterious agents, applied to *whiten* and beautify the teeth. There are compounds of every description, name and nature; the last advertised being better *always* than any previous, and they are represented as being wonderful, working miracles (almost) in beautifying the teeth.

Among the numerous compounds there are, undoubtedly, some that are harmless, and might be used with benefit, but great care should be observed in making a selection.

Charcoal, which has been, and is very freely used, possesses, we believe, injurious properties.

We have noticed the action of this agent upon the gums and the necks of the teeth of those persons who have made a free use of it. Its injurious effects are apparent by its forming a semi-circular ring of dark blue or black around the necks of the teeth just under the edges of the gums, which presents a very unsightly appearance. The unfavorable appearance is not the worst feature. These fine particles possessing a very powerful grit, being inserted beneath the gum, from which they cannot be easily removed, they cut and irritate in such a manner as to produce inflammation; the gums recede from the necks of the teeth, allowing viscid secretions access to the periosteum and alveolar process of the teeth, causing them to loosen and become unhealthy. We have known of cases where the stain was so permanent as to remain after the teeth were removed and the gums healed.

“There are particles in charcoal almost as hard as the diamond, and the finer they are comminuted or pulverized, the easier do they insinuate themselves under the edges of the gums. A person in daily use of this article may be known by a semi-circular black streak around each tooth, under the edge of the gums. These particles of charcoal remain there till, by

the tension of the gums, they are forced to cut their way out like so much pounded glass. From the continued application of this powerful grit from without, and the working of that from within the gums, they will be observed to lose their elasticity or tension upon the teeth, and gradually roll down, thereby letting in the atmosphere and tartarous accumulations of the mouth upon the unprotected parts, and thus a more speedy decomposition of the teeth must be the consequence.

“As a purifier of foetid substances charcoal stands pre-eminent; but as a dentifrice its powerful grit, acting upon the enamel, and upon the gums, cannot but prove dangerous to those in the habit of using it.”—*Delapierre on Human Teeth, part II, p. 127: Paris.*

No acidulated compound or mixture should be applied to the teeth. They impart at first a flattering whiteness, but this will be only of short duration, as they will blacken and rapidly decay.

*Acidulated Tooth Powders.*—Our attention has been frequently called to advertisements of “tooth powders” for whitening, beautifying and preserving the teeth, and we have found that

nearly all the dentifrices which we have examined contain more or less of tartaric acid, which, according to the tables of elective attraction, has a stronger affinity for the lime of the teeth than the phosphoric with which it is combined, and consequently must exert a most destructive action upon these organs. A powder having this acid for its base will, for a time, unquestionably "whiten" and "beautify" the teeth; but it will also, if used for a considerable length of time, as certainly cause their destruction and eventually discoloration. The sale of such an article can only be effected for a short time, as their pernicious influences exhibit themselves, and it is of course soon laid aside. Why a dentist should resort to such a composition is indeed strange, as a more superior article can and is made, free from acid, and which will not only assist in cleansing the teeth, but preserves the health and tenacity of the gums, purifies the breath, and adds much to the general comfort of the mouth.

"Spurious preparations, as "*tooth enamel*," washes for removing tartar, &c., are most generally prepared by individuals unacquainted with the wants and character of a good powder, and whose only aim is to make money by a



pretty exterior, regardless of the injury and destruction inflicted. These powders are found in almost every shop window, and many druggists scruple not to vend an article which, it is their duty to know, is most objectionable, greatly imposing upon the confidence of a confessedly ignorant public, by assurances unfounded and, in truth unreasonable.

*It is high time the profession should give some attention to this matter, and advise and instruct their patients to avoid such detestable mixtures.*"  
—*American Journal of Dental Science, New Series, vol. 1, pp. 403-4.*

A thorough brushing of the teeth *four* or *five* times a *day*, with cold water in mild seasons, and tepid water in the colder, using in connection a little white castile soap, or any other white soap of nice quality, once a day, say at night, usually will suffice to keep the teeth literally clean. There are some persons, however, whose teeth become discolored much sooner than others, and may require some simple tooth paste or powder.

It is far better to form a habit of cleansing the teeth, *regularly* several times during the day, than to neglect them for a time, and afterwards try to atone for the neglect by using some "beautifying" dentifrice.

A simple and good agent for cleansing the teeth may be made by mixing together equal proportions of prepared chalk and pulverized orris root.

Dr. L. S. Parmley thus writes in regard to cleanliness of the teeth :

“Were the teeth kept literally clean no disease ever will be perceptible. Their structure will equally stand the summer’s heat and winter’s cold, the changes of climate, the varieties of diet and even the diseases to which the other parts of the body may be subject from constitutional causes.”

## CHAPTER XXI.

## ARTIFICIAL SUBSTITUTES.

As the practice of wearing *artificial* substitutes to supply *deficiencies* of the *natural* denture is now so common, there are some things relating to this subject that should be noticed. One of the most important features to be considered is the proper adaptation of such mechanical arrangements to the parts, so that they shall be worn with comfort, without irritating the gums and sympathising parts; serious inflammation being often induced from this cause, it should be noticed and guarded against.

There is much injury sustained often, by the general health, from roots of teeth that are used to support artificial crowns, known as pivoted teeth. The roots of teeth used for this purpose are often in a diseased condition, or become so. Their inflamed and ulcerated state is often a

source of disease to the whole system. The gums become spongy, sensitive, and very painful, exuding a foul and unhealthy matter, which contaminates the breath, mingles with the food, and poisons the whole system. Pivoted teeth, when the parts are in a healthy condition, often serve as useful substitutes. The troubles arise usually from retaining these substitutes when in a condition truly offensive. It would be far better to part with such appendages than that the health should suffer.

The last point we shall notice is the importance of keeping all dental substitutes perfectly clean. It matters but little (comparatively speaking) how fine the materials may be, and how beautifully constructed, if proper attention and care are not bestowed in keeping them free from foreign accumulations.

We have seen whole and partial sets of teeth worn when in a condition very far from decent, covered with tartar or a coating of mucus, and particles of food, forming at once an offensive and unhealthy appendage.

Where partial sets of teeth are worn, supported by clasps, they should be often removed and the piece thoroughly cleansed ; likewise the remaining natural teeth, *particularly those around which the clasp passes.*

Thorough cleanliness in regard to all that pertains to the teeth, should be strictly observed

We have met with persons who have objected to the wearing of artificial teeth, classing them with jewels, ornaments and other superfluous appendages. The judgment of such persons, we think, is very much in fault. One adds to the personal health, comfort and enjoyment; the others, possessing no utility, serve only to gratify the eye.

The comparison is faulty, likewise, in another point of view. The teeth are or should be ornaments exceeding, in effect, all *gold* or *tinsel*, but a display of jewels or rich attire, when the teeth are defective, serves only to heighten the imperfection caused by their loss.

Persons who object to the use of artificial teeth, sometimes are so unfortunate as to require assistants both for eyes and ears. A writer has said that "a conscientious lady actually advocated similar objections to these while examining some artificial teeth through *spectacles*, and hearing my observations thereupon through an *ear trumpet*."

## CHAPTER XXII.

## ETHER AND CHLOROFORM.

It may be proper to make a few observations on the use of Ether and Chloroform. Almost every person has an instinctive dread of suffering. Resort is had to all the variety of agents, whether medicinal, chemical or of whatever description, to lull the sensibilities to pain. Persons cannot be blamed or censured for thus wishing to escape torment in any form. Various agents have been resorted to, in all ages of the world, to secure this wished-for relief, and few there are thus used that have not latent powerful qualities. Opium is one of these agents; this no doubt is a valuable agent when properly used, but when due caution is not observed, life may be destroyed. There are other agents of a narcotic character equally as valuable, and as fatal if improperly used.

The two agents, Ether and Chloroform, but recently introduced to the world, (as an esthetic) have had an influence in their department which has exceeded that of all other agents. These agents, it is acknowledged, are subtle and powerful, still the application of them has lessened the sufferings of many thousands, not only in this but all other countries. It has proved a "good Samaritan" in all the various departments of surgery. It is a well authenticated fact that a far smaller number have died under surgical treatment where these have, than where they have not been used. They have proved of great value in numerous nervous diseases—diseases which are fearful in their nature, from the most common to extreme insanity. I do not doubt but that there are many cases occurring almost every day where their use would greatly mitigate severe suffering. Where we can disarm physical suffering of its racking, torturing, life-destroying power, we think we are in duty bound so to do. We do not advocate its use in the many ordinary cases of tooth extraction, for we believe the physical suffering is far less than imagination pictures it to be, and because it subjects patient and operator to needless trouble and waste of valuable time. Many persons picture

to themselves terrible agonizing pain in the extraction of a tooth. We contend that any individual suffers more from an aching tooth in five minutes than they can possibly suffer from its extraction, providing it be done in a skilful manner. We are past the age of the racking engine called turn keys for extracting teeth. We have seen the perspiration pass off in drops from the brow of a stout man, in view of what he supposed he was to suffer from the use of this instrument; and the reason was, he once had his jaw broken in three several places from its use. Such cases have been common, but, by a more wise adaptation of mechanical contrivance, we have forceps, which are constructed to conform to the different classes of teeth, so that we now have dozens where formerly one instrument was made to answer all purposes. Therefore, under the more modern improvements of dental surgery, we do not deem it advisable, except in extreme cases, to use Ether or Chloroform in extracting teeth. We seldom advise their use, but, when patients insist on its being used, we will, although reluctantly, comply with their wishes. Our reluctance never, we think, arises from a want of knowledge as to their proper use, for we have used, and seen them used since their



first introduction, in, we may say, hundreds of cases, and never yet have seen a case where injury was produced. Ether we have seen, and experimented with it on a great variety of animal life, such as dogs, cats, hens, frogs, bees, a very large eagle, and a variety of other subjects, and have never witnessed any harm done to them by its use. The eagle, although quite large and powerful, measuring some seven or eight feet from wing to wing, we carried about by his neck, as a dead bird might be carried. The bees were taken up by the double handful without harm. Chloroform, we believe we used as early, if not earlier than any other person in the New England States for that purpose.

A friend of ours, then at Baltimore College, was the first to inhale it as an experiment in the United States. After the experiment, he wrote me the result, with the formula, and a short sketch of its origin. He says :

“ The Faculty of our College, (Baltimore College of Dental Surgery) relying upon such high authority, (referring to Prof. Simpson of Edinburgh) and anxious to get something which would mitigate the pain of dental operations, and being decidedly opposed to Ether, proceeded to

give the Chloroform a test. We all assembled in the lecture room—Drs. Harris, Bond, Handy, Cone and the class. Having an old root which I had long regarded as a nuisance, I volunteered to be experimented upon. After inhaling a few moments from a sponge, I found myself losing consciousness, and signified my willingness to have the tooth out. Dr. Cone extracted it, and although a somewhat tedious and difficult operation, I felt no pain, and my feelings were rather pleasant than otherwise, &c.”

The formula he gave me as follows :

Chloride of lime in powder,	-	lb.	4
Water,	- - - - -	“	12
Rectified spirits,	- - - - -	oz.	12

This letter was dated at Baltimore, Dec. 18, 1847. It commences thus, after the common salutation :

“I have great news for you. A new agent for producing insensibility in surgical operations has been discovered, &c.”

We assisted in producing the agent on the reception of the letter, and administered it the same evening with very good results. By this we establish our early knowledge of the agent and its use. I have seen no earlier date, nor any as early, from any source whatever.

As regards the merits of the two agents, we have preferred and used Ether, never having bought but four ounces of pure chloroform. We believe that it can be shown, beyond all dispute, to be the safer of the two. Many accidents and much trouble has arisen from the use of Chloroform. The great difference between the two agents is, Chloroform affects the system much more rapidly, and its effects are far more difficult to overcome; it gets the mastery of the operator ere he is aware. Ether, on the other hand, affects the system much slower, and is more under the control of the operator, and being more volatile than Chloroform, its effects are sooner dissipated.

We would remark, for the information of any one who may wish to use these agents, that it is our experience, when a person is in a quiet state of nervous feeling, where there is no uncommon excitement, fear or dread, either of pain or of the effects of the agent, the exhibition of it usually is very pleasant. On the other hand, where the individual is laboring under much nervous excitement, where there is great fear of suffering or injury, its effects are far from pleasant, and it requires a much larger quantity of Ether or Chloroform to effect the desired state.

We would advise, therefore, any person wishing to inhale an anesthetic agent, to think of it as little as possible, and keep the mind in a composed and quiet state. Lastly, never inhale these agents when possibly to be avoided, but rely on your own determined will.

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## CONCLUSION.

If this volume is read with care, and its instructions and principles heeded, good must as inevitably follow as effect follows cause; and both parent and child will experience happy results in the durability and beauty of their teeth.

“If good we plant not, vice will fill the place.”

If we do not rightly direct the child physically, it cannot possess vital energy, no more than the mind can be vigorous and active without proper cultivation.

The second volume of this history was published in 1794, and it contains the history of the year 1793. It is a very interesting and useful work, and it is one of the best of its kind that has ever been published.

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