

## **What can a mother do to preserve her children's teeth?**

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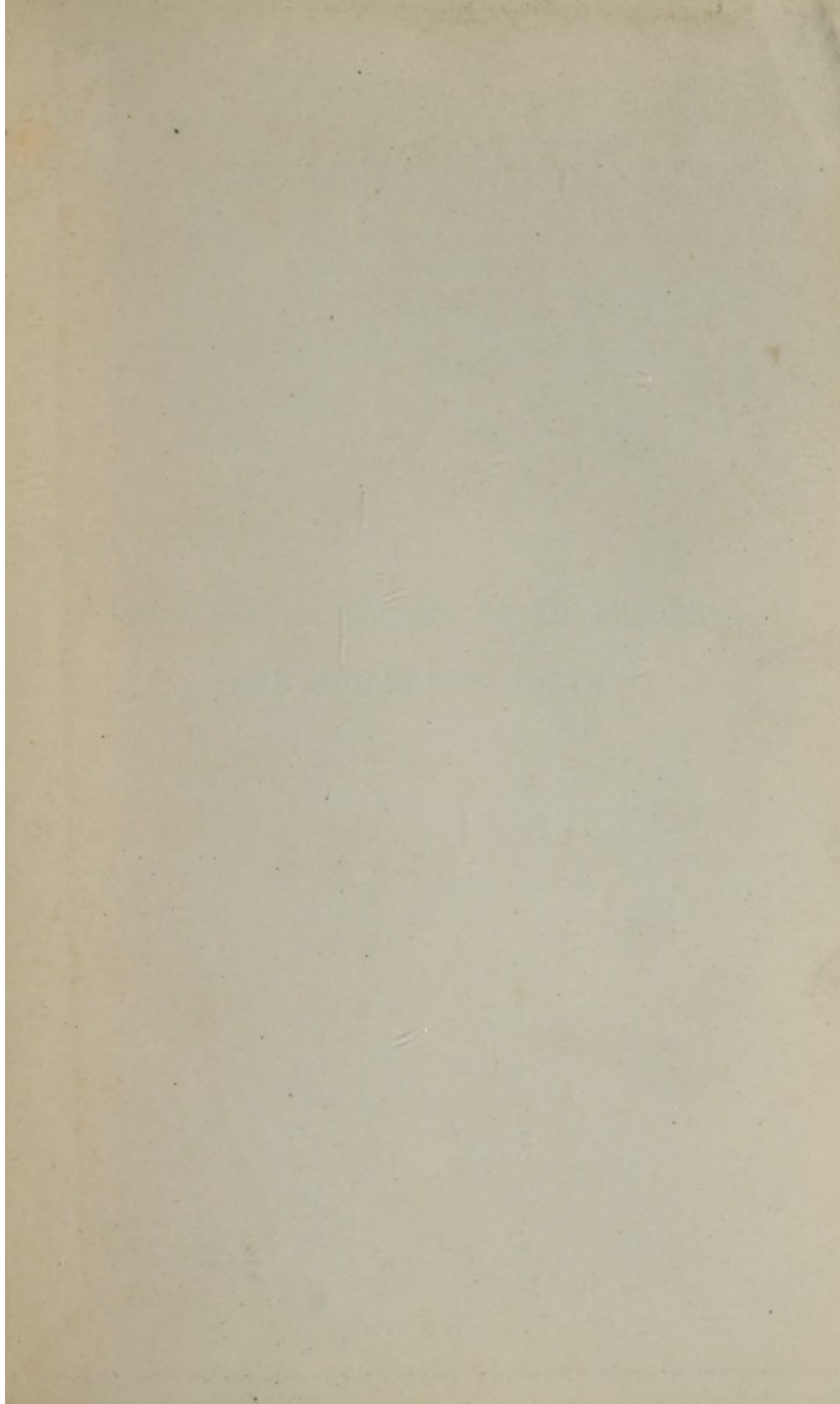
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QUINBY.



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WHAT CAN A MOTHER DO TO PRESERVE  
HER CHILDREN'S TEETH?





WHAT CAN A MOTHER DO TO  
PRESERVE  
HER CHILDREN'S TEETH?

BY

HENRY C. QUINBY,

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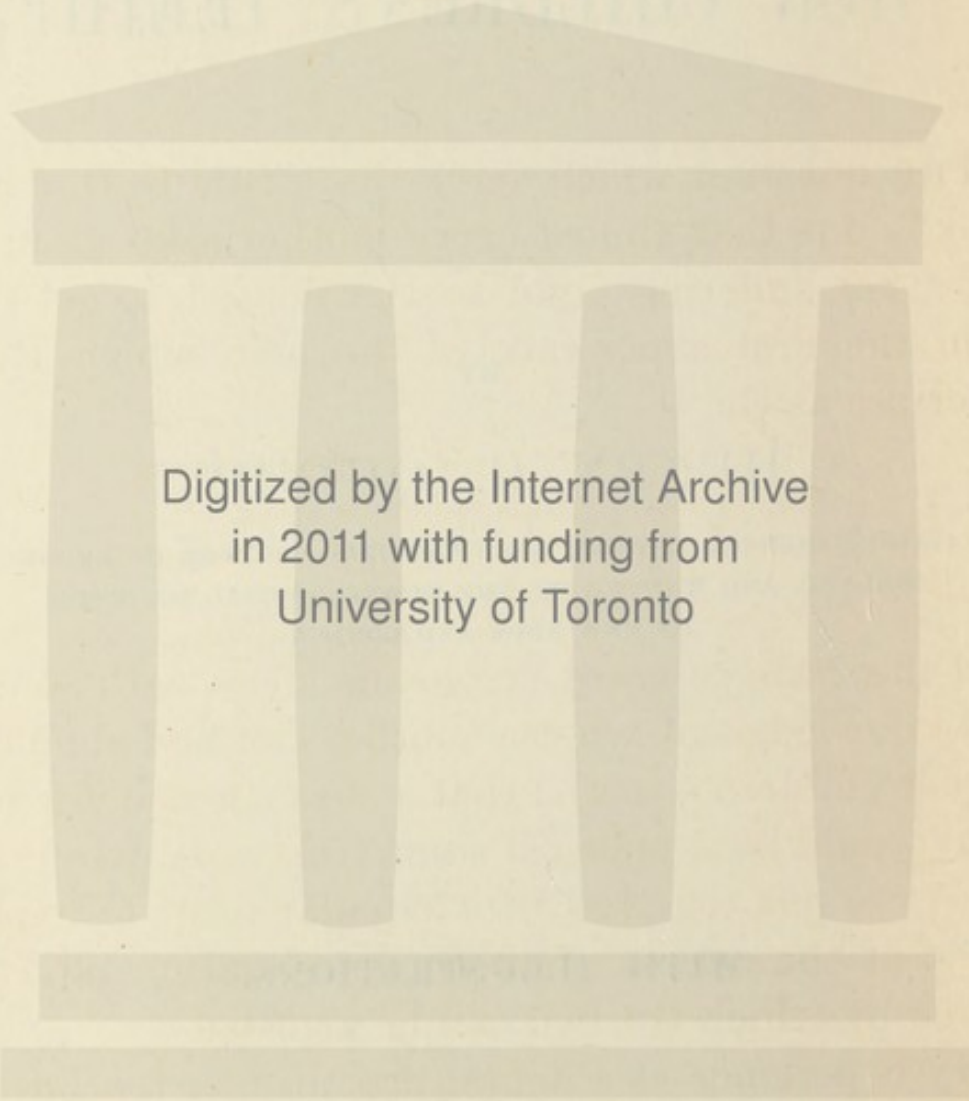
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WITH ILLUSTRATIONS.

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—  
1887.



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## WHAT CAN A MOTHER DO TO PRESERVE HER CHILDREN'S TEETH?

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THE question which serves as a title to this little book is one that almost every mother asks when she takes her suffering child to the dentist to get relief from the first experience of the pain which Burns describes as the—

——“venomed stang  
That shoots my tortured gums along :  
And through my lugs gi'es mony a twang  
Wi' gnawing vengeance.”

And there are so many erroneous ideas, with so little real knowledge of what a mother can and should do for her children's teeth, that it has seemed to me a want would be supplied if some trustworthy information were put together in a popular form to explain a few of the causes of tooth deterioration, and the means by which the evil can be arrested.

My experience as a dental practitioner teaches me that if parents do not take the trouble to look after their children's teeth intelligently and carefully, the dentist may as well cease his endeavours to preserve these organs, and go back to his old position of tooth-drawer, which is still the only idea conveyed to many minds by the word dentist.



There cannot be much doubt about the truth of the common assertion, that the teeth of the present generation are much more troublesome than those of the generations immediately preceding us, but I do not believe that the change from good to bad has been wholly, or very largely, the work of recent years. The fact has been forced upon our notice in late years, partly because the suffering begins earlier in life with the young children, and partly, no doubt, by the advance in dental science, which has made possible the successful treatment of teeth that our fathers would have had no hope of saving, and would, therefore, have got rid of with but little ceremony or remark. The deterioration has been going on long enough before our time, but its extent is beginning to be realized because it has reached a point where the most superficial observer cannot fail to see it.

Modern science and universal experience are teaching us that if we would develop any particular point or peculiarity in our domestic animals, we can do so by careful selection in breeding and proper exercise of the functions of that part. The converse must, of course, be also true, and a degree of deterioration will take place in any part or function that is neglected and not made to do its natural work. The same law must apply to human beings, and, therefore, the strength and durability of our teeth must, to some extent, depend upon the use which has been made of these organs by the successive generations of our ancestors. Now, a perfectly developed set of human



teeth is rarely seen in civilized life ; but in savage life, except where the practice of mutilating them prevails, it is equally difficult to find a defective set of teeth, unless the defect is the result of accident or violence. This can scarcely be wholly due to the personal care of the savage, although Mr. Stanley, the great African traveller, says, in a letter which will appear later on, that, in his opinion, it is entirely owing to this personal care ; but I believe that it is because, from the beginning, the ancestors of the savage have used their teeth to do the work that nature intended them to do, and the proper development has been maintained through all the generations. His teeth are large and well formed, and there is plenty of room for them in the massive jaw, and plenty of strength in the muscles for their due exercise. But this development gives the lower part of the face undue prominence ; to our civilized ideas it is repugnant, as indicating a predominance of the animal over the mental nature, and, unconsciously to ourselves, the practice of "natural selection" fines down the human jaw until there is not room for the proper number of well-developed teeth. Overcrowding results, and the weakest goes to the wall, but rarely without inflicting disease upon its nearest neighbours.

At the same time we have been growing more and more luxurious in our tastes and appetites ; the food we eat must be so delicately cooked that mastication is rather a means of prolonging the enjoyment of the sensation of taste than a necessity in the preparation



of the food for swallowing, and busy people do not afford themselves that indulgence, so that the legitimate exercise of the teeth is curtailed and their strength diminished, thus tending to a mere rudimentary development, and rendering them less capable of resisting the action of those acid secretions which are caused by indigestion, and so many other forms of internal weakness and derangement.

While there may be many other circumstances which contribute in special cases to develop decay, it is, I think, unnecessary to enumerate them here ; the weakening process has been going on for centuries, and, as it progressed, the teeth have more and more readily yielded to flank attacks that could not have had any power to do mischief if the normal strength had been maintained. If, then, this work of degeneration has been going on so long, we cannot reasonably hope for a rapid cure ; a sick man cannot recover strength in a moment ; so we must, while patiently building up the strength of our children's teeth, use every effort to guard them from local dangers, and thus, by checking the evil, we may prevent a vast amount of suffering.

When we consider that the development of the temporary teeth has been going on for several months before a child is born, and has made so much progress at birth that a considerable portion of the crowns—or that part of the tooth which ultimately makes its way through the gum—is already solidified and covered with enamel, it will not, perhaps, appear to be unreasonable if I say that



a mother's care for a child's teeth may begin before birth. Many mothers suffer from their own teeth during the whole period of gestation, and almost every mother's teeth will be affected by decay at such times, even though she may not feel pain from them. In proportion as her own teeth suffer, the mother may expect her child's temporary teeth to be more or less defective; and I firmly believe that the care she takes to preserve her own teeth will not only be a source of comfort to herself, but will greatly improve the condition of the child's teeth.

Like every other part of the human frame, the teeth must have new material constantly supplied to them to make up for natural waste. We may even go further than this, and say that, unless the process of calcification—or solidifying from a constant supply of lime salts—is steadily going on through the whole period of life, the teeth cannot be in a naturally healthy condition. It is certain that the teeth do, under favourable conditions, become more and more dense in structure as the years advance. The central (or pulp) cavity which contains the vital parts of the tooth (the nerve and blood vessels), and from which the tooth is nourished, grows gradually smaller from the formation of new bone upon its parietal walls (this formation often proceeding until, in old age, the pulp cavity is entirely obliterated in the crown of the tooth, and only remains in a part of the root), and, the favourable conditions being maintained, the teeth are less likely to cause dis-



comfort after maturity than before. Now, supposing this supply of lime salts to the teeth to be interrupted, and, at the same time, the constitutional disturbance which has caused the cessation of the flow of nutriment to the teeth should produce a condition of things in the mouth analagous to an acid bath, in which the teeth are immersed, and we cannot be surprised if a rapid destruction of tooth substance should result. This is exactly what occurs in a large proportion of cases during gestation. However much lime there may be in the food and drink which a woman can take, it is only that which she can digest and assimilate which can become available as nutriment for the teeth (and, of course, for the osseous frame generally, but here we are only thinking of the teeth), and if she is not very strong she may not be able to properly prepare more than her own system urgently requires, yet she is suddenly called upon to supply enough for the development of another human frame within her, and it is no wonder that, for a time, her own bony frame suffers from a kind of starvation. At the same time, the secretions of the mouth, more especially the mucous secretion, will become quite perceptibly ropy, or glutinous, in appearance, and the litmus paper will instantly betray their acid character. Thus, while weakened by deprivation of their proper nourishment, the teeth are subjected to the action of a strong acid which quickly finds all the weak, imperfect spots or fissures in the enamel, and, if the work of destruction is not checked, the old superstition, that



a woman must lose a tooth for every child she bears, is more than verified, for she will be fortunate if the loss is limited to one.

But before any very serious mischief has been done, the teeth themselves will have given warning that they are in danger. There will be a feeling of general sensitiveness to heat and cold, salt and sugar cause discomfort, if not actual pain, and these indications should never be neglected. The first thing to be done is to cleanse the mouth frequently and thoroughly of these ropy secretions. It is not enough to brush the teeth, although that is a matter which not one person in a hundred ever does properly, but which will be fully treated later on. The whole mucous surface of the mouth needs cleansing, and this is most effectively done with some of the preparations of carbolic acid. Any one may make for himself a very satisfactory and efficient wash for this purpose by mixing one drachm of Calvert's No. 1 carbolic acid with a pint of water; shake well, and it is ready for use, and will keep any reasonable time. One mouthful of this mixture is enough to take at any one time (of course, it is not to be swallowed), and by closing the lips, and then working the cheeks and tongue, it is to be made to wash every part of the mucous membrane of the mouth, and used as a gargle for the throat before it is put out of the mouth. If the teeth are too sensitive to bear the presence of cold water, the chill can be taken off the mixture by adding a few drops of hot water at the moment of using, but as



nearly as possible the strength of the mixture should be maintained at a drachm, a teaspoonful, or sixty drops (all of which mean the same thing in chemist's mixtures) to the pint of water. A measuring glass, marked to measure any of the above-mentioned quantities, can be bought for sixpence, and it is better to have this than to trust to guess work. If a bottle of the pure acid is kept in the house it should be under lock and key, where children cannot get at it, for in its pure state carbolic acid is dangerous. Mixed in the proportions I have indicated this will be found a very pleasant wash for the mouth (by no means dangerous, unless one chooses to swallow a glass of it, when it might cause discomfort); it leaves a cool, clean sensation in the mouth, and I can truly say, after many years of practice as a dentist, that I have never found anything else so satisfactory as a preservative of the teeth. There are many preparations of this acid for the teeth and mouth, some of them delicately and nicely flavoured, so that it is difficult to detect the presence of the acid, which, after all, is the essential ingredient, and I do not think it needs to be disguised.

It is scarcely necessary to say that there is nothing in carbolic acid which can injuriously affect the teeth, but the question has been raised by one of the critics of a former book of mine,\* a professional man, who ought to know better, how I could consistently recommend the use of an acid to

\* "Notes on Dental Practice."



correct the effects of acid, and I take this opportunity to explain that carbolic acid, or what may as properly be called phenic alcohol, is not a true acid, but has about equally the qualities of an alcohol and some of the qualities of an oil, and that it is its antiseptic qualities, destroying germs which would produce acid ferments, which make it so valuable as a mouth wash. A tooth may be placed in fluid carbolic acid, as strong as it can be to retain its fluid character, and remain in it for weeks without any perceptible effect on enamel or bone.

If the expectant mother does not succeed in maintaining fairly good health for herself, it is very unlikely that the child's dental development will proceed satisfactorily; therefore, for this reason, as well as for so many other important considerations, every effort should be made to keep up her strength. It is not the province of a dentist to say how health is to be maintained, but on one point there cannot be any difference of opinion, and that is, that, for the sake of both mother and child, a sufficient quantity of earthy salts, such as are required for the development of the osseous system, should be a certainty in the daily food; and, particularly in the case of mothers who are not strong, it will be wise to take, every day, a small quantity of the syrup of phosphites, now so skilfully prepared that these salts may be readily assimilated and enabled to reach their proper destination. After the child is born, it, too, should have an occasional dose of some of these preparations of phosphites, the frequency of the dose depending, of



course, on the strength of the child. In the case of a delicate child this is a matter of great importance, and should be continued, with occasional intermissions, until the child is ten or twelve years old, or until strong enough to do without.

Mothers often ask when they should begin to brush a child's teeth, and I wish to make my meaning perfectly clear in answering this question : you cannot begin the use of the brush too soon. The first time you wash the child's mouth let a suitable brush be used instead of a sponge — (*see Baby's brush, page 13*); and, so long as the child is under your control see to it that, at least twice a day, the brush is thoroughly and carefully used. It is a hopeless task to attempt to persuade boys and girls of from eight to sixteen,—a time of life when the will is strong, and neither care for the future nor interest in personal appearance has taken any hold upon the mind,—to pay attention to their teeth, if the habit of cleanliness in this respect has not been formed in early childhood. Let the child grow up from its earliest consciousness with a feeling that a tooth brush is a daily necessity, to be faithfully used, and the habit will not be easily set aside when the mind begins to act for itself. See that the brush is faithfully used and the teeth really cleaned in a commonsense manner, as a piece of plate would be cleaned for the table. No good housekeeper would allow a piece of plate to be put on her table with all the prominent parts rubbed bright and all the depressions and crevices full of dirt and filth.



But that is exactly what almost everybody does with his teeth, and certainly it is what all children will do if they are not better taught. The tooth brushes ordinarily sold by dealers are utterly worthless, and worse than worthless, because they are misleading, and deceive those who use them by leading them to suppose the teeth have been cleaned, when what has really been done is that any foreign substance which may have been on the prominent parts of the teeth, where it might not have done much harm, has been removed to the interstices where it can and will work mischief. To do the work properly, the brush must be of just sufficient hardness, or softness, to allow of its being forced well into all the interstices, inside and outside the row of teeth, with an up and down movement, as well as backwards and forwards, and transversely across the front, permitting a good, vigorous rubbing of the gums as well as the teeth, and without wounding the gums. Even this is not enough when the teeth are not very hardy, but a thread of very loosely twisted silk or linen, well waxed with common bees' wax, should be passed through all the interstices and every fragment of food removed, either in this manner or with a toothpick. Because mother does not like to see a toothpick at table it does not follow that it should not be used in the retirement where one would use a toothbrush. It seems an absurdity that one should think it necessary to say that the teeth should be brushed inside as well as outside, but it is perfectly true that a large pro-



portion of the better class of patients, such as can afford to employ a first-rate dentist, never touch with a brush the inner surfaces of their teeth: I mean the surfaces which we should technically describe as the lingual surfaces—those next to the tongue and the palate. Now, such brushing as I describe is simply impossible with a brush made of hog's bristles. It seems to be an understood thing with the brushmakers and dealers that anything is good enough for a tooth brush; while, with the general public, the material of which it is made is a matter of little interest, as the ownership of such an article is more a simple concession to an idea which has become prevalent in polite society—that it is right to have one—than from any notion of its usefulness; so the buyers take what the seller has to dispose of, choosing, as a rule, the cheapest, and expecting it to last them years and years. Thus, a good tooth brush has become a thing difficult to obtain, and, when obtained, few know how to take care of it.

No tooth brush for an adult should ever be made of anything rougher than horse hair. For young children the finest hairs should be selected; and for babies badger hair is hard enough. Such brushes as these—I give a few illustrations—will be worthless in a month if they are kept always wet; if the brush is used and then thrown wet into the brush trays usually found on the washstand, the hairs will rot in a short time, and soon begin to come off (not come out, as most people complain of their doing), and the careless user of the brush is half suffocated with



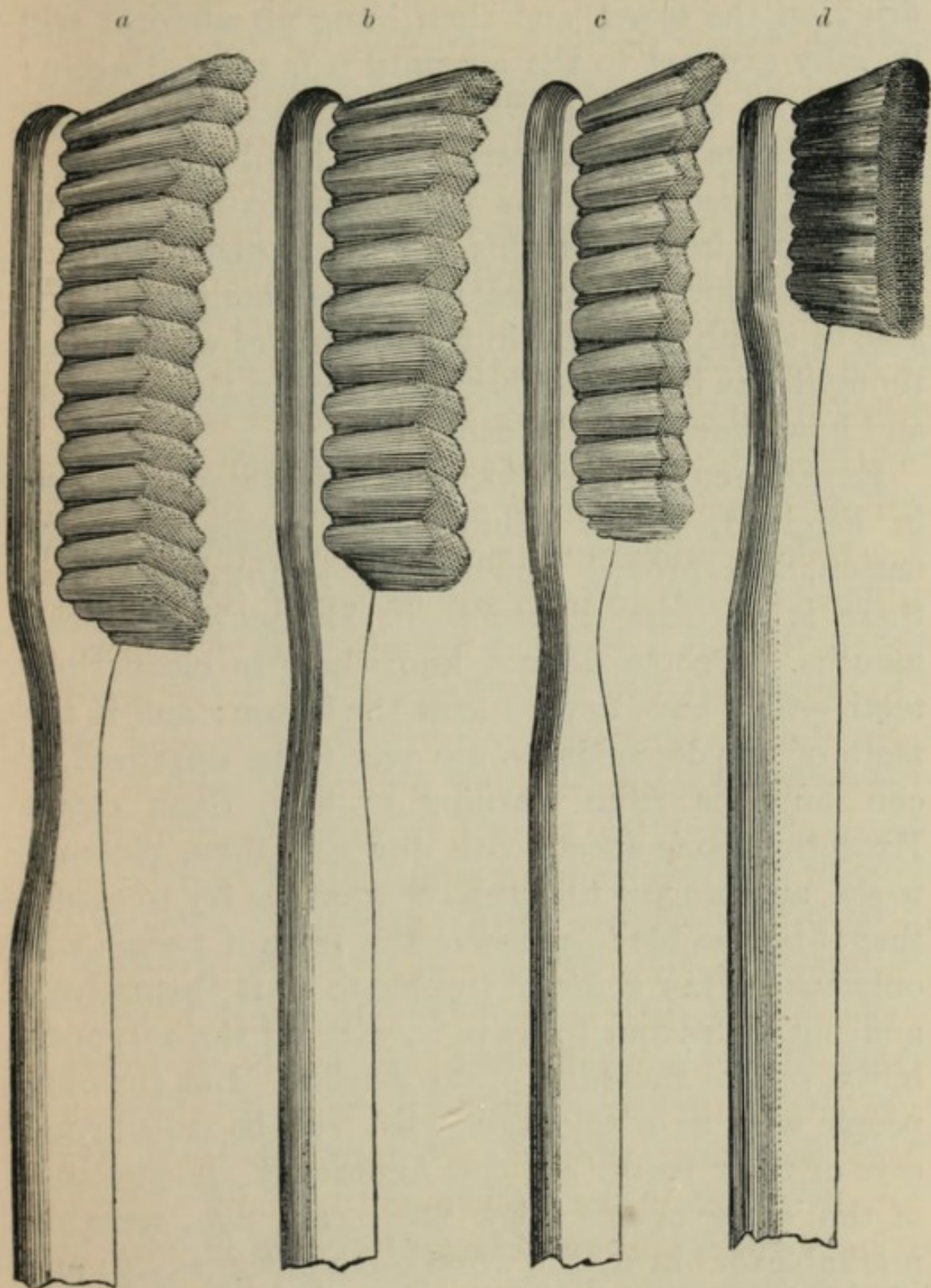


Figure 1.—*a*, Full size brush; *b*, Medium size brush;  
*c*, Small size brush; *d*, Baby's brush.

hairs in the throat. The brush should always be dried on the towel, and then hung up where it will be fully exposed to the air until it is wanted again; and, if so treated, it will last six months at least, which is as long as any tooth brush can last if properly used. If this little book is destined to arouse any interest in this subject, I trust it will not be long before every dealer in the country will be able to supply brushes, in the making of which some thought has been exercised about what they are for, and how they are to be used.

Experience for thirty years as a dental practitioner in England, where I have seen people of every nation, has proved conclusively to my mind that there is no class of people in Europe with clean mouths. People do not know how to clean their teeth—they have never learnt the lesson; and if the teeth of our descendants are ever to be improved, it can only be from learning to keep them clean. Exceptions one meets with now and then, pleasant to see, and proving the truth of what we try to teach, that it is possible to preserve the teeth if people will only take a fair share of trouble to do it themselves, and not endeavour to leave it, with all the responsibility, on the shoulders of the dentist. But the only people who, as a rule, take what can be called good care of their teeth, are the Americans, descendants of the same people who, fifty years ago, were remarkable for having the worst teeth in the world; and it is the mothers who have done this work, loyally assisted and instructed by the dentists—for to help the



patients to help themselves is all that the dentists can do. We see men and women, in good average health and strength, losing their teeth at forty or fifty years of age, when there can be no question that a reasonable amount of instruction and good management in childhood would have enabled them to save a fairly good and useful set until they reached the Psalmist's limit of three score years and ten. Teeth which were delicate in structure break down and crumble away from neglected decay in youth, and those which were strong and hardy become loose and fall out from disease in the gums, arising from simple ignorance of what a clean mouth means. It is perfectly true that nature has not provided us with a tooth brush ready made, and, to some minds, this seems a sufficient reason why we should not use one. But nature also neglected to provide a way of disposing of the filth which might accumulate about our residences, and it took years of unwearying persistence on the part of the early teachers of sanitary science to convince us that we must do something ourselves to remedy this oversight by Mother Nature; the same argument, that if Providence had not meant us to suffer from the effects of such accumulations, some means would have been provided for their removal, being considered unanswerable. But, happily, the scientists won their battle against ignorance and superstition; and, perhaps, we may hope that, in time, mothers will learn that cleanliness in the mouth is the only hope for arresting the rapid progress of deterioration and



decay in our teeth, and that it depends on them to learn the lesson well, and teach it to their children, if they have any real interest in the subject. It is literally true that no dental practitioner could select from his patients more than one per cent. of whom he could say, these keep their mouths clean. Yet when we urge upon them the need for greater care in this respect, we are met by a self-satisfied rejoinder to the effect that it cannot be necessary for them to take more pains than they do, as they always brush their teeth well; and some even take offence at what they consider an unwarrantable implication of personal negligence, and the next time they are forced to go to a dentist to seek relief from pain they look up somebody who will not make such ungentlemanly insinuations.

While preparing "Notes on Dental Practice" for the press, some years ago, I wrote to Mr. Henry M. Stanley, the African explorer, and founder of the settlements on the Congo, asking him if, in the interests of science, he would take the trouble to observe the people about him in Central Africa in respect to peculiarities of development of teeth and lower part of the jaw generally, tendency to decay of the teeth, irregularity, etc., etc., and the following is his reply:—

"Expedition Internationale du Haut Congo.

"Congo River, W.C. Africa, *June 9th, 1883.*

"Sir,—I am sorry that my time is so occupied with so much work, otherwise I should gladly have entered into the subject of your enquiry at greater length.



“It is undoubtedly true that civilization has refined the face, but without disturbing the distinctive characteristics of either races, nations, or tribes, which goes to prove that the bones of the face are not improved or modified. The refinement of the face does not always depend on the conformation of the bony frame of it, but on that higher, subtler creation called intelligence or educated mind. This will appear obvious to you at once, for every day around you you may examine and draw your own conclusions from it.

“Turning to the teeth, to which you have referred in your letter, I consider that, in general, the teeth are either larger or smaller according to the size of the jaw, though there are instances—abnormal—of very large teeth in a small jaw.

“In this Expedition there are representatives of no less than thirty African tribes, collected from various parts, from East, West, and Central Africa, and in all I observe that the teeth depend upon the size of the jaw. In the solid, square, massive jaw I observe the teeth have the same characteristics—square, solid, massive; for the extreme prognathous jaw, pointed at the chin, I observe the teeth are longish, inclined to be narrow, irregular, prominent; in the delicately-formed lower jaw of the Somali I observe the teeth small, regular, and in no way inferior in beauty to those belonging to the most ‘refined face’\* of Europe. ‘Centuries of luxury’\* do not injure, or rather malform, the teeth, nor do they deprive the teeth of their natural exercise, but rather increase the exercise by the quantity and quality of the meats they masticate. The ruin of the teeth in Europe is to be attributed to the acids, the strong quality of medicines, the condiments, the ‘sweeties,’ so greatly consumed in youth, and the utter want of care, despite brushes and tooth powders. The laws and customs of society in Europe prevent that care of the teeth which they should have.

“The Africans generally, after each meal, with a brush formed in a minute from a bush, proceed to brush away the

\* The quotations are from my letter.



adhesive particles of food, and three or four mouthfuls of water complete the operation. In the morning all hands may be seen, at leisure time, vigorously scrubbing away. In council even, frequently the brush is used instead of the European cigar. The Africans consume no acids, nor condiments, and have no access to 'sweeties,' and, as their stomachs are not so soon deranged, they have no use for strong medicines; purely vegetable infusions supply them with all they need.

"As the sculptors of ancient Greece improved on nature, so the European dentists improve on the average of natural teeth, but it frequently happens that the dentist may see with envy natural teeth more beautiful than any his genius can form. I have a young African with me whose teeth only a dental Praxiteles or Phidias could equal perhaps, but never surpass, in beauty, colour, and perfection of setting, and he, unfortunately, cannot be said to be civilized.

"That the African teeth are stronger and more durable can only be attributed, as I said before, to the greater care bestowed upon them.

"Besides the care of their teeth and the long preservation of them, the Africans, savage as they may be, are able to teach Europeans several other lessons which, if diligently followed, would redound to their comfort.

"I am, your obedient servant,

"(Signed), HENRY M. STANLEY."

"H. C. QUINBY, ESQ."

I did not receive Mr. Stanley's letter in time for the work I was then preparing, but if I had, I should not have published it in that work; for, although it practically admits the points I wished to prove—viz., that the teeth of the natives of Central Africa are better than those of civilized Europe, and, indeed, contains no allusion to decaying teeth there, which may be taken as indirect evidence that those people are not troubled as we are—yet Mr. Stanley makes



up the bulk of his letter with the old-time rubbish about the effect of condiments and sweeties and strong medicines, and cannot refrain from covert sneers at the dental profession, all of which made me think the letter would be out of place in a work intended for dental students. I, however, publish it in full here because it tells us of the hitherto unsuspected instinct which teaches the African savage to take more care of his teeth than we, who pride ourselves on our civilization, have ever dreamed of doing.

It may be as well for me to say here that sugar is almost as necessary an article of food for the young as bread itself, and that it is only an intemperate use of it, which might cause an acid return from the stomach, that can do any injury to the teeth. It is, of course, well to regulate the supply of sugar to your children, but do not forbid it or make a luxury of it, for human nature, even in children, is apt to long for what is forbidden, and, perhaps, indulge in secret and by stealth, thus doing themselves more harm than could possibly come to them from having it in a matter-of-course way. Another absolute fallacy about the teeth is that medicines destroy them. The teeth may and do decay when we are ill and taking medicine, and in some forms of illness the mischief done to the teeth is very serious indeed; but it is the nature of the illness itself which, by vitiating the secretions of the mouth, destroys the teeth, rather than the action of the remedies which are given to counteract disease. I quote a paragraph



from the *New York Medical Record* relating to this subject,—I am sorry I cannot give the author's name, but I take the quotation from an abstract of a paper read before some society, and the author's name was not given in the report:—

“In any febrile condition, the fluids of the mouth are as constantly and intensely acid as any medicine that is administered by the physician; and from the high temperature at these times, the power of these acids for evil is greatly augmented. The consequence of this is a rapid decomposition of food, etc., and the elimination of other deleterious acids, all forming a mighty power, under which it is not surprising that tooth structure should melt away like dew before the sun. It is more surprising that any tooth should be left to tell the tale.”

As soon as the child is able to understand what you mean by rinsing the mouth—as soon as it is capable of holding some water in the mouth for a few seconds and then putting it out—you should begin to use some simple tooth powder. Precipitated chalk is a very good thing to begin with, and if dark lines begin to show on your child's teeth, near the margin of the gum, you may take a little slip of soft deal, shape the end of it like a carpenter's narrow chisel, and polish away the dark lines with it and the chalk as a polishing powder. Such dark lines show the beginning of disintegration of the enamel, and destruction of the teeth will surely follow if it is neglected. At three years of age you may safely use a powder which contains some soap as well as chalk, or other delicate, gritty substance. There are many saponaceous tooth powders, and they are nearly all



good as far as I know them. Soap is an essential ingredient, so much so that I do not consider any tooth powder or dentifrice worth having, unless one third part of it is soap. But a little care is necessary to keep saponaceous powders in usable condition. Soap must be dried very carefully before it can be reduced to powder, and, naturally, in this state it has a great affinity for water, which it will absorb rapidly and will then become lumpy, and probably rancid, when it is, of course, disgusting as a tooth powder. It is best to keep these preparations in a wide-mouthed stoppered bottle, and from this to put out a week's supply into an ordinary tooth powder pot for the washstand; then the brush should be kept where it will be fully exposed to the air, so as to dry quickly after it has been used and rubbed as dry as the towel will make it; you then dip the dry brush into the powder, of which you can thus take up what you require, and wet the brush with the powder on it when you use it. In this way the powder will never get damp. By your putting out only a limited quantity at a time it cannot even absorb moisture from the atmosphere, and the only possible objection to soap as an ingredient in tooth powder is obviated.

A mother should provide herself with a small mouth mirror, one in a metal frame being preferable, because when it is used it should be warmed to the temperature of the mouth by dipping it in warm water, or else the moisture of the breath will condense upon its surface and obscure it. With this



mirror the mother should accustom herself to make weekly inspections of her children's teeth from their earliest appearance, so as to be able to detect the first symptoms of decay. It is a matter of every day experience to have children of three or four years of age, often younger, brought to us, suffering from toothache; and this, I am quite sure, is absolutely preventable if mothers will look after the mouths of their little ones properly. Careful brushing twice a day according to the instructions previously given, and weekly examinations—when, if any decay is detected, a visit to a dentist, and a slight stopping of gutta percha, or other plastic material for filling teeth, will check it—will certainly prevent the baby teeth from decaying to such an extent as to cause pain, and (what is far too often not even thought of) rendered useless for mastication. Nobody doubts the importance of teeth in the preparation for digestion of the food of an adult, but how very few ever think of how the roll of infant mortality is swollen by ailments arising from indigestion. The baby teeth are only intended to last a few years, therefore, if they last a few less years than they were intended to, what does it matter? If this is never put into words it is put into practice in a very large majority of families; and yet, as I have said before, these baby teeth need not be a cause of suffering, and the child need not lose the use of them.

These examinations of the mouth are of value in another way. The child becomes accustomed to



having the mouth looked at, and therefore the inspection by the dentist, when a visit to him becomes necessary, is not regarded with the doubt and suspicion which sometimes render operations almost an impossibility. As a rule, painful operations are unnecessary for a child, even when a tooth has been neglected until it aches, but if anything of a painful nature is found necessary, the child should be treated with perfect frankness, and plainly told that there will be pain. Deception in such a case is a piece of utter folly as well as a sin, for if a child is ever deceived in this way it will be a tedious business to regain his confidence. Children are too often frightened also by senseless conversation in their presence about the horrors which may be expected at the hands of the dentist. It is quite sufficiently difficult for the dentist to do his duty to his patients when they have confidence in him; but when absurd prejudices about his work have been the subject of home teaching, what other result can be expected than that children will manage to evade and put off their visits to the ogre as long as they can? which is too often until irreparable mischief has been done.

The temporary teeth (Fig. 2)—so called because they are all to be replaced by others at the proper time—ten in number in each jaw, will usually have appeared when the child is three years old. A little variation from this does not matter much, nor is it of much consequence to the future of the mouth whether they are regular or irregular in arrange-



ment, always excepting such irregularities as may be the result of habits of sucking the thumb or fingers.

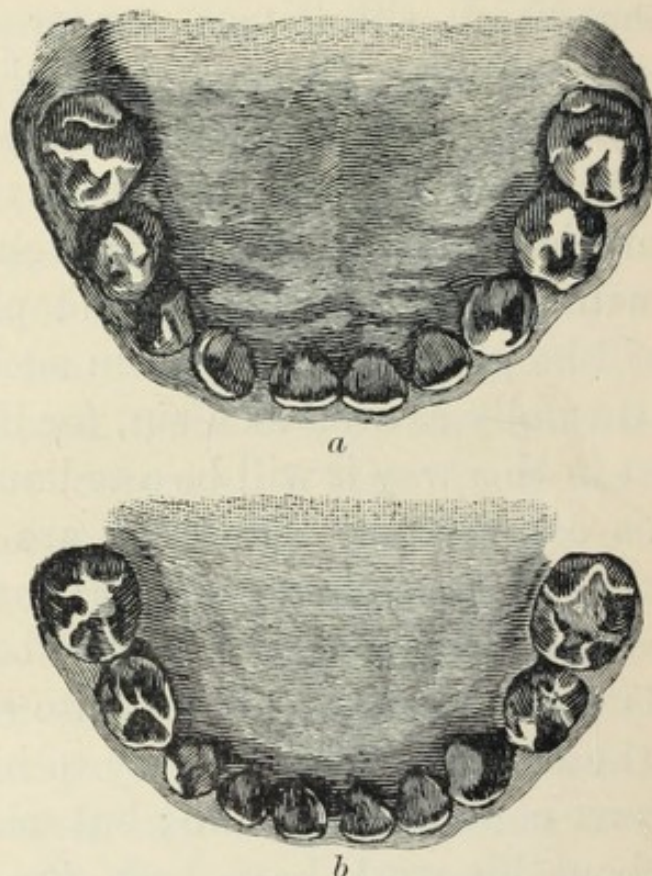


Figure 2.—*a*, Upper teeth; *b*, Lower teeth.

A child should never be allowed to contract habits of sucking the thumb or the fingers, or lip, or tongue, for all of these interfere with the proper development of the jaw, and often produce serious malformations which are troublesome and difficult to correct. While the bones are still soft it is easy, by continuous pressure, to alter their shape; and if one will think for a moment, it will be seen that, when a child is sucking the thumb, the weight of the hand and arm is applied so as to flatten or press in the anterior portion of the lower jaw, and extend the



upper, thus producing a protrusion of the upper jaw and teeth. On the contrary, in sucking the fingers, the weight of the hand tends to elongate the lower jaw, and the child will have what is termed an underhung jaw.

I have in my possession the models of two mouths, in which thumb-sucking was permitted until the children were about twelve years old, so that probably as much mischief was done as could be done

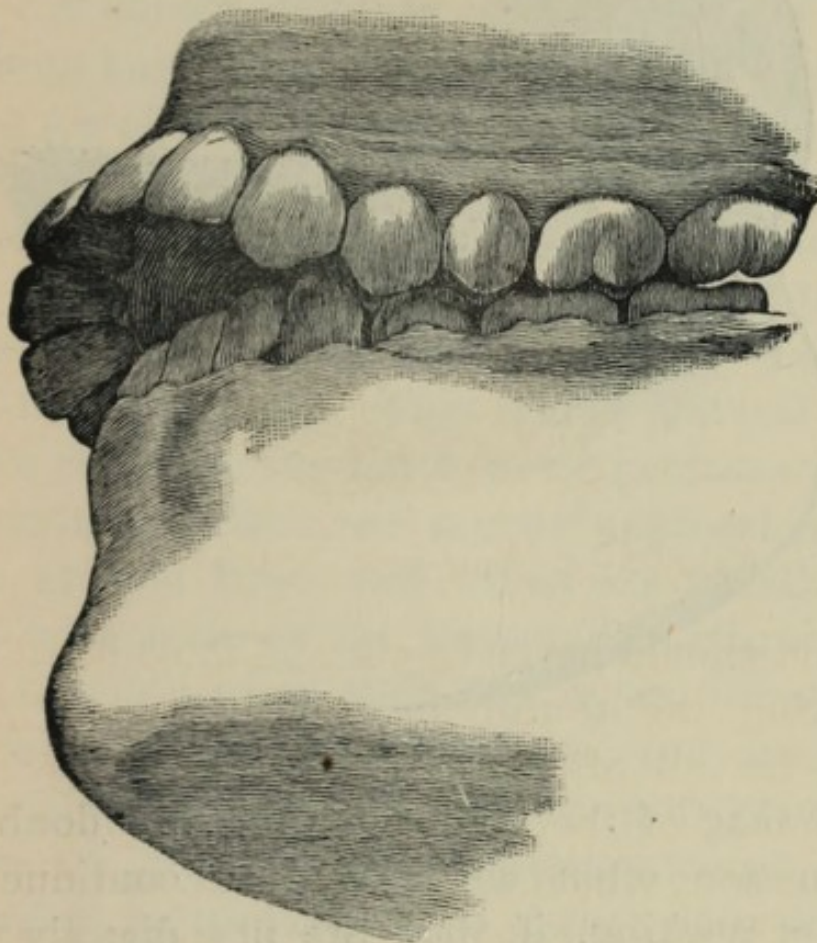


Figure 3.

by this habit. In the one case the hand was held in the ordinary position, with the thumb pointing upwards, and the effect was to elongate the upper jaw and check the growth of the lower (Fig. 3);

while in the other case the hand was inverted, the thumb pointing downwards, and, of course, the effect was to pull forward the lower jaw, the same effect that is ordinarily produced by sucking the

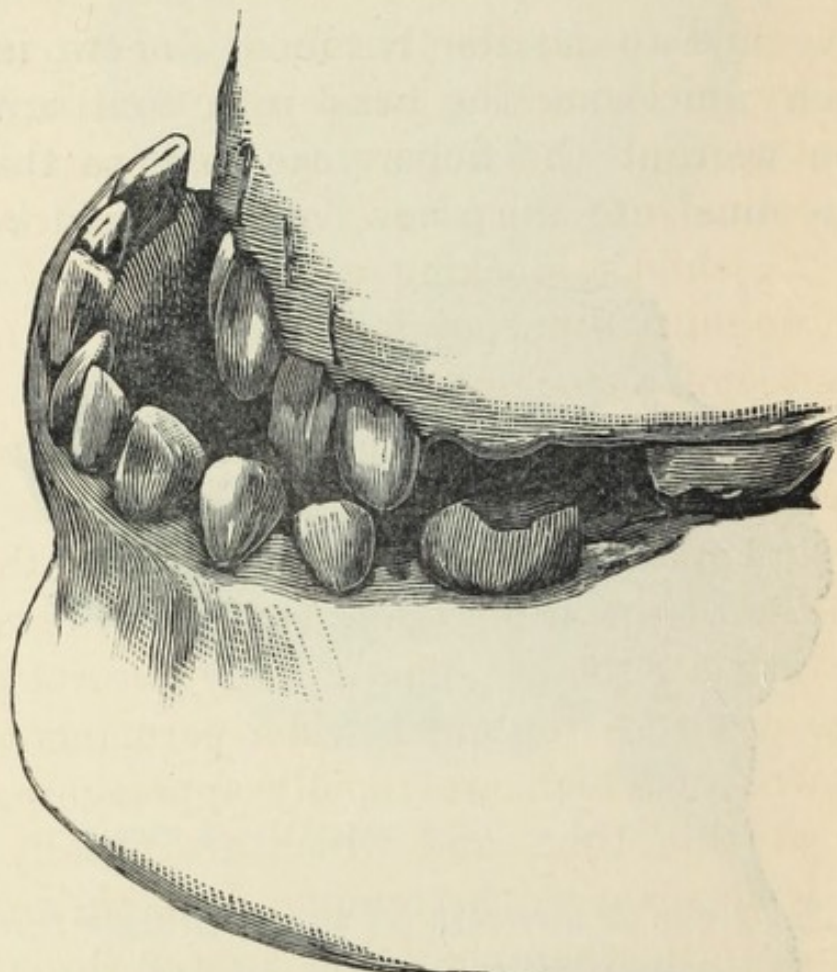


Figure 4.

fingers (Fig. 4). There can be no doubt that children are often encouraged to continue these habits of sucking, if they are not directly taught to do it, by those who are ignorant of the ultimate effects; but when these are pointed out it only needs a little reflection to see that the practice must cause more or less deformity, and they are deformities which the dentist will find very difficult



to treat. Mothers should see to it, that their children are never allowed to put thumb or fingers in the mouth to keep them quiet, and if the habit is already formed it is useless to take half measures for its cure. It must be made impossible for the child to get its thumb or fingers into the mouth by enclosing the hand in a covering which will not permit the fingers to be separated, and securing this into the sleeve of the frock or night-dress. A child's stocking will do, but, of course, something knitted purposely, and shaped at the end like the toe of a stocking, will be better.

Soon after a child has all the temporary teeth, it is perfectly natural and right that separations should begin to appear between them, and for these to increase until the front teeth, especially, have wide spaces between them. This is only natural growth to make room for the much wider permanent teeth, the crowns of which are rapidly approaching completion at this time, and which are usually about half as wide again as the temporary teeth, and fully grown in width when they first appear through the gum: so they always appear large, and out of proportion to the child's face, until the face grows more mature. I mention these spaces because we are often asked by mothers if we cannot draw the teeth together again, and if the new teeth will be wide apart when they appear: quite needless anxieties, but many mothers will be glad to be assured that they are so.

We often see these temporary teeth very seriously



decayed, and a source of constant pain to a child, and although it is always best in such cases to seek professional advice and assistance if possible, it is not always possible to do so, and it will be some comfort to a mother to know of simple remedies which she can use herself. It must always be borne in mind that there are practically but two kinds of toothache which amateur treatment can reach, and it is important to know which of them the patient is suffering from before applying remedies. The first toothache arises from an inflamed nerve,\* and may be felt anywhere on that side of the face, or in any tooth excepting the tooth where it arises, and in that one only as a twinge of pain when anything cold, or hot, or salt, or sweet touches it. Of course, I do not mean to say that this kind of toothache is never felt in the tooth which causes it; but usually, when a patient has got so far as to admit that the suffering is from toothache, and not the much better sounding word neuralgia, he will point to the wrong tooth as causing it. This kind of pain may generally be traced to its source by the use of the mirror, examining each tooth on the painful side of the mouth, looking for some one which is recently broken down with a soft white decay, and paying little attention to those where the decayed surfaces

\* I use the word "nerve" here in the ordinarily accepted sense; but, as I have explained before, the pulp of a tooth consists of blood vessels as well as nerve, and through it the whole of the materials have been supplied to build up the dentine, or bone of the tooth, and to feed it after it is built up. In future, whenever I have occasion to allude to this part of the teeth, I shall use the word "nerve" in this sense.



look old and brown. The sufferer's own idea as to where the pain comes from is of very little value, and the only indication we can have (not always reliable, however) as to which jaw the pain comes from is, that if it comes from an upper tooth it seems to shoot up to the temple, and if a lower tooth, back to the ear.

The other kind of toothache is that which usually results in abscess, commonly called gum boil, and is caused by the putrid gases from a dead and decomposing nerve, but may be kept up for years, at frequently recurring intervals, by similar gases from the decomposing pus which flows into and fills the nerve cavity after the nerve has disappeared. These gases find their way out of the nerve cavity by the opening at the end of the root through which the nerve enters the tooth; they poison the tissues there and set up an inflammation which is absolutely outside the tooth, but which may be readily detected, because pressure or percussion on the tooth hurts the inflamed part: therefore, this, which is not toothache at all, is generally called toothache because the patient can point to a tender tooth; and the other, which is genuine toothache, is called neuralgia because it is not traced to a tooth. Now, in either of these cases, the first step is to wash away as much as possible of the broken-down fragments of tooth, food, etc., in the cavity, and, for this purpose, the amateur dentist should have a small syringe, and use warm water, cleansing the cavity as thoroughly as possible with a small spoon-shaped scraper and



drying it with some blotting paper or lint. Now will be the time to settle, if there is any doubt on the point, which of the two causes of pain the patient is suffering from. A drop or two of cold water, directly into the cavity, may seem cruel, but it would satisfy a doubtful mind as to the source and cause of pain if it comes from an inflamed nerve; while, if it is from periosteal inflammation, or, in other words, the early stages of abscess, the water would scarcely be felt, but, if anything, would soothe and quiet the pain. On the other hand, a smart tap on the tooth with the handle of a tooth brush would not be felt in the case of an inflamed nerve, but would cause a twinge of pain if the inflammation was outside the tooth. If it proves to be an inflamed nerve I do not know of any more effective application, which can be used by amateur hands, than pure carbolic acid, but this must be used with care, or the mouth will be seriously burned.

We will suppose the cavity in the aching tooth to be cleaned out as well as possible; now roll up, rather loosely, a pledget of cotton about the size of the cavity, just moisten it with carbolic acid, wipe the cavity dry, and place the pledget in it, taking care that if it is saturated with the acid the surplus should be dried off with lint or blotting paper until it is only moist. If this soothes the pain leave it alone, or, if not, try another in half-an-hour, but do not fall into the very common error with amateurs of thinking that if a little of a thing is good, much will be better. All the remedies that will cure tooth-



ache are more or less poisonous in their nature, and must, therefore, be used with care. Tincture of aconite (the pharmacopœia preparation) applied in the same way as the carbolic acid, will sometimes relieve, or laudanum, or oil of cloves, an old remedy which has burnt many a mouth until the remedy was worse than the disease. Any of these are likely to give relief to an inflamed nerve; only remember that you will not get any more, nor any quicker, relief by saturating your pledget of cotton, and half killing your patient, than you will by applying your remedy in a commonsense manner. And it is not to be expected that any of these remedies will give more than temporary relief; but, having got that, the patient should get to a dentist as soon as possible, and have the tooth so treated as to get permanent relief: for the preparations which will really kill a nerve are too dangerous for amateur handling, nor could untrained hands treat the tooth properly after a nerve is killed.

The other form of toothache, which, as I have said before, the sufferer always recognises as toothache, because the offending grinder can always be detected by pressure or percussion, is always caused by putrid gases in the pulp cavity. The illustration (Fig. 5 *a*) shows a section of the roots and part of the crown of a permanent lower molar tooth, the remainder of the crown being broken down by decay. The decay in this case has never penetrated so far in the direction of the pulp cavity as to cause a breaking in of the bone



immediately over the nerve ; but we will suppose the latter to have passed through the stage of inflammation, which I have described as genuine toothache, and to have died, as a nerve always does in time, from such an attack of inflammation, thus terminating pain of that character. Now, I quite believe it is possible, if one keeps well and strong, to go on for a long time after this without any further trouble from this tooth, but it is a treacherous calm. The nerve, or pulp, occupies the whole of the central cavity, plainly shown in the illustration (and which always

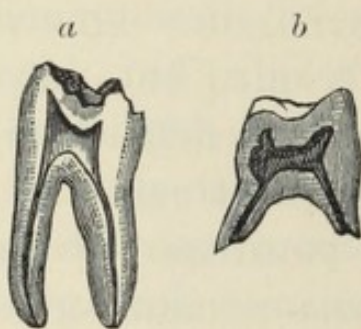


Figure 5.

corresponds exactly to the form of the tooth), but it is dead, and being dead it is, of course, subject to decomposition. The result of decomposition is the generation of gases, which are much more bulky than the dead tissues, and which must therefore find an exit in some direction. Now, if these gases could escape through the crown of the tooth, the worst that would be likely to happen would be a very unpleasant taste at times ; but, as will be seen in the illustration, there is still a covering of more or less disintegrated bone over the pulp cavity, sufficient



to prevent the escape of the gases directly into the mouth, and thus they are forced through the small opening at the end of the root, where the nerve and blood vessels enter the tooth ; the surrounding tissues are more or less poisoned ; the seeds of abscess are planted ; and it only needs that the general strength should be, by some means, reduced a little below par for the poison to act effectively. There will be a gnawing, disagreeable sensation on that side of the face for some hours perhaps, but the first definite symptom will be a feeling that the tooth has suddenly grown longer than it was, and that it is very sore when the opposite tooth touches it. This will go on until the face is swollen, or until the pus which is secreted finds an outlet through the gum or elsewhere. Now, the obvious remedy for this is to drill a hole through the crown of the tooth into the pulp cavity and let out the gases and pus confined there, and in very many cases this might be done by amateur hands. The chief point for you to remember is that there is no nerve for you to plunge the drill into, for the nerve must always be dead before this kind of toothache is possible ; that it is caused by poisonous gases from the dead nerve, therefore you cannot touch a vital part with your drill. The pulp cavity is exactly in the centre of the tooth ; therefore you should point the drill as directly as possible to the centre, and when you have reached it the relief will be instantaneous. Hot plasters on the gum—small bags filled with capsicum (red pepper), and placed on the gum over the roots of the tooth—tincture of pellitory



on a small flat pledget of cotton, or piece of lint, placed on the gum—almost anything which will act as a counter-irritant on the gum, will be useful in these cases; but the remedies are to be applied on the gum, not put into the tooth, as in the former case. You used to be told that you had got cold in your teeth (no one ever attempted to explain the action of the cold), and you have thought that you must close up all apertures to keep the cold out, but you will certainly not get any permanent relief until the contents of the pulp cavity have found an outlet. Now, in the case of an adult tooth, you would need the services of a dentist to treat the tooth for the cure of the abscess, and the ultimate filling of the roots, so as to prevent a recurrence of the disease: as, of course, if the roots are not filled up solid they will become gorged again with offensive matter, and the abscess will be always reproducing itself. But with a temporary tooth this is not possible, because there is a process of absorption going on, taking away the roots of the temporary tooth to make way for the advancing permanent tooth, and this process is of such a nature that the pulp canal (which you see in the last illustration, grows narrower towards the end of the root) will in the temporary tooth grow wider towards the extremity; therefore a root filling, which is easily managed in an adult tooth, where the packing will be from the large to the small end, becomes impossible in the baby tooth, where the canal grows wider instead of narrower. Fig. 5 *b* is a section of a temporary lower molar, the roots of



these teeth, which are more liable to decay than any other teeth in the mouth, are often totally neglected until they are hopelessly broken down and painful. The mother should look for them, and if they show any indication of decay, as they will do in a majority of cases, a dentist should see them as soon as possible, and put in some soft filling to preserve their

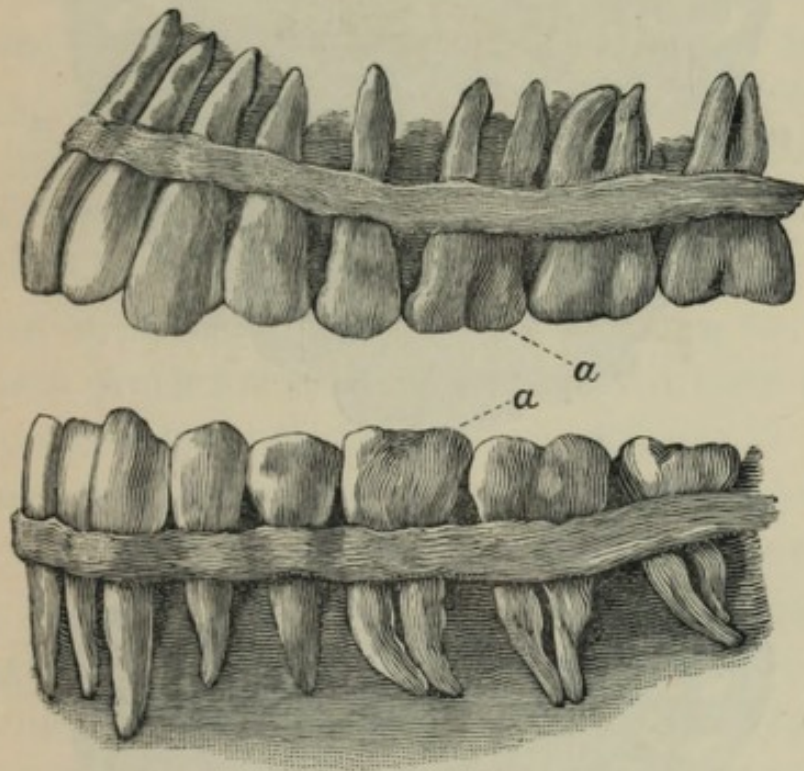


Figure 8, *a, a*, shows the position of the six-year molar in the fully-developed adult upper and lower jaws.

usefulness, and keep them comfortable until the proper age for permanent work. I usually prefer some preparation of gutta percha for this purpose.

In a former work I have fully explained my reasons for adopting the method of treating these and other teeth in the mouths of young people with gutta percha fillings, and it is unnecessary for me to repeat

Figures 9, 10, 11.—The next three illustrations, upper and lower teeth of a child of nine, each jaw shown separately, and the two together as in the natural occlusion, show the six-year molars fully erupted, and all the permanent front teeth, or incisors, which, although they look so irregular, do not require any present interference, because, as will be seen when the jaws are closed, the upper arch is everywhere larger than the lower.

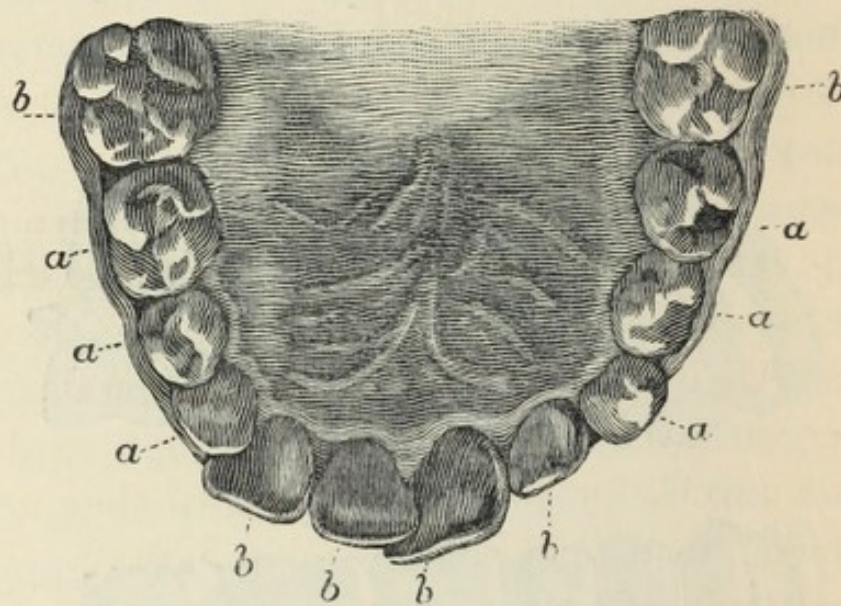


Fig. 9.—Upper jaw.

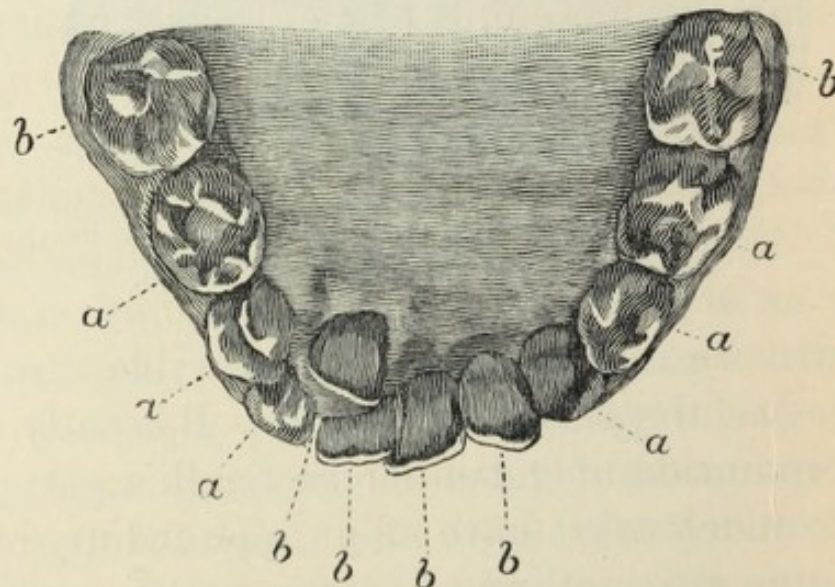


Fig. 10.—Lower jaw.

*a*, Temporary teeth. *b*, Permanent teeth.



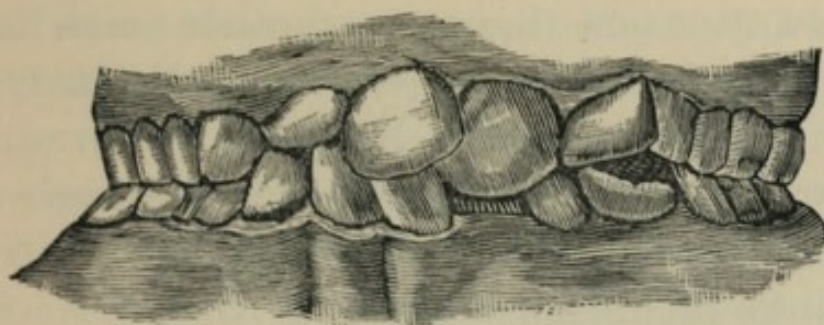


Fig. 11.

them here, for, I trust, the teachings of this little book may reach far beyond the sphere of my own practice, and mothers taking their children to a dental practitioner for advice and attendance cannot do otherwise than act upon the advice they then receive. All I need say here is that, generally, I find it better in every way not to attempt to do any permanent work for young people until they are well past the constitutional changes of puberty.

Immediately after the appearance of the six-year molars, as they are commonly called, you may begin to look for the loosening of two lower front teeth, the lower, permanent, central incisors being the teeth which are naturally the next to appear. If the permanent teeth come up close to or beneath the milk teeth, the latter will become so loose from absorption of the roots, that they may easily be removed with thumb and finger. But it often happens that the permanent teeth will come through the gum considerably behind the milk teeth, sometimes as much as a tenth of an inch inside the arch of the temporary set, and in this case there may not be much absorption, and the milk teeth remain quite firm and strong in their sockets. These are cases



which always cause the young mother much anxiety. The new teeth look so large, very much larger than the pretty little teeth she has admired so much for five years, and the new ones are so rough at the edges, like a saw, so far back, surely they can never be got into their proper places. All these are quite needless worries. It must be remembered that teeth do not grow in width after they come through the gum, and that what looks so out of proportion to the face of the child of six or seven years is the tooth of fully developed manhood and womanhood. The jaw bones grow and change the face from the round chubby face of childhood to the oval of maturity, and this growth keeps pace with the development of second dentition in effect, although sometimes the teeth may appear before the jaw has grown enough to make space for them ; or it may grow faster than the teeth seem to require, and so make the wide

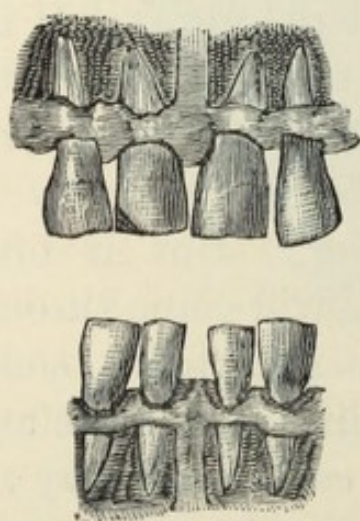


Figure 12.—Upper and lower temporary front teeth.

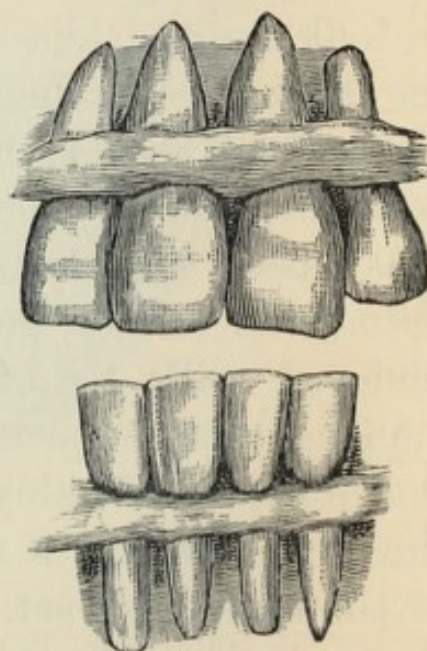


Figure 13.—Upper and lower permanent front teeth.



spaces before alluded to between the milk teeth; but, all in good time, the teeth will arrange themselves in proper order, and we must take care not to interfere unnecessarily with nature's processes. The illustrations\* (Figs. 12 and 13) show the natural sizes of the four upper and lower milk teeth, and the corresponding teeth of the permanent set. The serrations in the cutting edge of the new teeth will wear off very soon after, in due course, they come to meet the upper teeth, unless it is a case where, from ill-health in the first year of life, there is an actual deficiency of enamel on the teeth, but in that case something more than the mere cutting edge of the teeth will be defective, and it may be necessary for the dentist to see them. If the temporary teeth do not become loose enough for home extraction, the child should be taken to the dentist as soon as the permanent teeth show their cutting edges through the gum, but a mother should never, in any case, permit the extraction of more milk teeth than there are permanent ones actually visible. Two teeth should never be taken out to make room for one, nor three or four teeth to make room for two. It is no matter how much larger the new teeth are than the old ones, nor how much the new ones may be out of place, the extractions should be tooth for tooth, and no more. I give here an extract from "Notes on Dental Practice," because I think that, on this point,

\* These illustrations are from drawings of actual preparations of teeth in their natural position in the jaws, with a part of the anterior wall of bone supporting them so removed as to show the roots. I call attention to this because many people suppose the temporary teeth have no roots.



mothers, as well as dental students, should have a perfectly clear idea of what is, and what is not, good practice.

“It is a matter of almost daily occurrence for children to be brought to us with these teeth making their appearance more or less inside the arch, or slightly turned in a diagonal position, and probably the cutting edges serrated. The parents are anxious that we should do something at once to remedy these deformities, as they consider them; usually, however, the dentist's assurance that the teeth will move forward to their proper place as soon as the jaw has grown sufficiently to make room for two teeth that are half as large again as the two which have occupied that position, and that the serrations are perfectly normal, and will wear away as soon as the teeth come into use, will satisfy them. But whether they are satisfied or not, nothing will justify the dentist in yielding to the desire to have something done at once, and extract four teeth to make room for two, or a central and a lateral to make room for a central. We should never extract more than the precise number we wish to make room for, and leave the rest until the appearance of more new teeth shows the necessity for further extraction. If the new central is very far inside the arch, we may find that there has been very little absorption of the root of the temporary central; but it must be removed nevertheless, and it will be enough to do this. Nothing more will be needed, although the tooth may seem much wider than the space it has to occupy. I have seen several cases where the permanent central appeared almost directly behind the temporary lateral; but it may be taken for granted that it is a central out of place, and



extraction of the temporary central will almost certainly make it right. There is always an appearance of justification for the operator, who thinks it right to get these teeth quickly into place by extracting more than the proper number, for a satisfactory result is quickly visible to the parent. I have often seen the four central incisors occupying the position of the temporary incisors and canines, and certainly they looked very nice ; and I have no doubt that the dentist who extracted the six teeth to make room for four, thought himself, and was thought by the parents, to be a clever fellow to have straightened a set of irregular teeth so quickly. But the error will be obvious two or three years later, when the permanent canines appear. The first and second bicuspid may be expected before the canine, and the distal surface of the lateral incisor and the mesial surface of the first bicuspid will be in close contact before the canine appears. The latter tooth is generally developed somewhat outside the arch, but in this case it might be a supernumerary tooth, for there is absolutely no room for it, and the cause of this is plainly and unmistakably the extraction of six teeth to make room for four. The incisors, if left to work their own way, would have been pushed forward by the pressure of the tongue, until they made room for themselves, with the temporary canines still in position : but the extractions simply stopped the growth of the jaw, because there was no longer any occasion for expansion, as the necessary space had been provided by *professional* interference.

“The upper centrals are the next in order, and they, too, are a source of anxiety to the fond mother, who naturally wishes her child to have pretty and regular teeth. They are so large, or they overlap, or they are not quite



straight—would it not be best to take out the little tooth that seems to make the new one stand out so at that side? How often we hear such suggestions, and how trite, to us, seems the reply that there is no cause for anxiety; that the tooth which seems so large now, will not appear so out of proportion when the face has grown more mature; that, having so much more breadth than the baby teeth, they cannot stand quite in the same position the others occupied. This desire to have something done at once to hasten nature's work is a temptation that is often unconsciously held out to the young practitioner; and how many have yielded to it, not always for the mere fee, but to secure a patient, or from a want of confidence in their own judgment, a wish to oblige, or perhaps from ignorance of the right treatment. It has been a fault of teachers in our profession, that they have told us too little about how and when nature should be assisted, and when left to herself, in the management of the mouth, while second dentition is going on. The pupil is taught to read, and then he is at once passed on to classics and mathematics. The text-books tell him all about the origin and development of the teeth, and the minute anatomy and relation of all the surrounding tissues, and then go on to tell him how the teeth should be treated at maturity. So the young man begins a practice with the idea that he is a dentist when he knows how many teeth should be in the mouth at a given age, and how to make a gold filling. The hiatus that is left in his training must be filled up by the teachings of his own experience, and naturally he makes some mistakes.

“The same rule that applies to the lower teeth should be the guide in relation to extracting for the upper incisors, viz., not to extract more than the precise



number we wish to make room for. We must let nature do her own work as far as possible, giving her only such aid as is imperatively demanded."

Very little more need be said on this subject. As the front teeth appear, one by one, the mother should observe whether, when the child's teeth are firmly closed, all the upper ones are shutting fairly outside those of the lower jaw, that is whether the upper arch is everywhere larger than the lower, because if any one or more of the upper teeth go inside the lower ones they can never right themselves without professional aid. Some simple appliance will have to be made to press the tooth or teeth forward, while keeping the front teeth from contact until the change of position is accomplished. The illustration

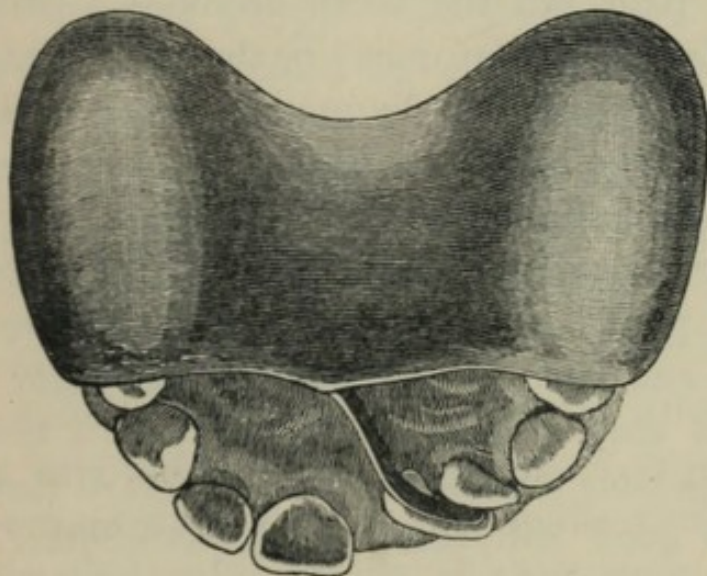


Figure 14.

(Fig. 14) shows an appliance for moving one of the upper front teeth. The back teeth are covered by the plate, so that the upper and lower front



teeth cannot be made to touch each other, and the spring, by gentle pressure, which is continuous, forces the misplaced tooth into the right position in the arch. There is so little pain from this process that a child rarely speaks of it, but only of the inconvenience of a foreign substance in the mouth, and only that for the first day or two. I quote again, from the former work, some remarks which the parent, as well as the dentist, should pay attention to in these cases :—

“ With this simple apparatus the work can be done very quickly ; in some cases that I have treated, the tooth has moved an eighth of an inch in a week ; but it is never advisable to undertake these cases, unless we are sure of the hearty co-operation of parents and child, else we may be in many ways thwarted in our endeavours. There is not much pain, but the tooth becomes a little sore, and the plate is removed at once ; or the child cannot eat with such a clumsy thing in the mouth, and it is laid aside at meal times ; the consequence is that no progress is made, because five minutes without the plate may undo the work of twenty-four hours. It is the wisest course simply to point out the fault, and show how it can be remedied, and then, if the parents are eager to have it done, it is easy enough to do it ; but if the dentist is the only person who feels any interest in these matters, very little good will result from his efforts.”

These cases are very simple, and easily managed if they are attended to at once ; but if they are left until the permanent canines (or what are usually called eye teeth) make their appearance it is



often a much more difficult matter. This is, however, a question which must be left to your professional adviser.

The temporary teeth have usually all disappeared, and have been replaced by permanent ones at eleven years of age, often at ten. In rare instances one may find a temporary tooth or two in the mouth at full maturity, but they are exceptional cases in which the permanent tooth has never developed, or by some accident it has been displaced in the jaw while incompletely developed, and so has never advanced to its proper position in the dental arch; and as the advancing permanent tooth is the exciting cause of absorption of the roots of the temporary tooth, and the misplaced tooth has never acted in this way, the milk tooth has remained firm and strong in its socket. One often hears of people who have never lost the temporary back teeth, and have never had new ones; but those people are only heard of, they are never seen by professional men. I did once meet with a case where two temporary molars were remaining in a mouth which had the full complement of thirty-two well-developed permanent teeth that had found space to arrange themselves without displacing or disturbing the two lower temporary molars. An amusing circumstance connected with this case was that, on my stating the fact to the fortunate possessor of so many good teeth that he had two baby teeth still remaining, he looked at me with an expression of the most profound contempt, and got up and walked away without a word.



The mother should be, during the whole process of second dentition, a keen observer of all the changes in the mouth ; and, as frequently as attendance at school will permit, every tooth should be examined carefully, with the mirror, for the detection of the first indications of decay. It has already been stated that the six-year molars are peculiarly liable to decay ; but, unfortunately, none of the new teeth are safe from the attacks of the destroyer, and it is a fact that, although it is probable enough that the children who are blessed with good teeth are not taken to a dentist, of those who are brought to us not one in ten will have escaped more or less serious decay in some tooth other than the first molars before the twelfth year. The part most liable to decay is the point of contact with the adjoining tooth, and in its early stages it usually shows only a whitish opaque spot, with the enamel apparently unbroken. I say apparently, because the commencement of decay is always from the exterior of the tooth, through some natural or accidental defect in the enamel, and the abrasion of the enamel from the sides of the teeth chafing against each other is usually enough, combined with the neglect of the lodgments of food and acid secretions in these interstices, to establish the work of destruction at the point of lateral contact.

I differ from a good many of my professional brethren in my treatment of these cases of early decay in the permanent tooth, but I repeat that I do not think it wise to attempt to do permanent work



while the patient is growing rapidly, and is about to pass through a period of important constitutional changes. Teeth which are decaying previous to or during the period of puberty, are decaying rapidly as a rule, and are, therefore, very sensitive: for rapid decay is necessarily associated with an inflamed condition of the soft fibrils which permeate every portion of the apparently dense bony structure of the tooth, and thus the preparation for filling of a cavity in such a tooth must of necessity be somewhat painful; and if this preparation, or excavation, is to be carried to the point necessary for permanent work, the pain must be prolonged. Then the presence of a metallic filling (gold, or any other metal) on the sensitive surface acts as an irritant, because the metal is a quick conductor of heat and cold, and everything that is taken into the mouth above or below the temperature of the blood will give a shock of pain through such a filling, and this, I contend, by keeping up the inflamed condition of the soft fibrils, tends to a breaking down of the bone in immediate contact with the filling, and thus fails to check the decay. And, finally, none of us can do work which can be guaranteed to be permanent except under favourable circumstances, and these cannot be very satisfactory when a boy or girl is suffering under the infliction of, what seems to them, needless pain, by a hand which, if they do not hate, they have not learned to believe gives pain only to save from greater pain and disfigurement. A simple gutta percha filling can be inserted, and be a very



effectual preservative from further decay, without subjecting the young patient to a very painful ordeal, and such a filling will be a non-conductor, not subjecting the tooth to pain from thermal changes, and there is every probability that when the period of puberty is passed, and rapid growth, which draws so heavily upon the supplies of material for bone-making, has ceased, the favourable circumstances, so necessary for really permanent work, will be found in existence; the gutta percha filling will have so effectually checked decay that the sensitiveness of the decayed surfaces will have subsided, so that gold, or other suitable fillings, may be inserted with little pain, and with a good prospect of remaining useful for a long time.

At about twelve years of age the jaws will have lengthened sufficiently to make room for another grinding tooth, upper and lower, on each side of the mouth. These are called the second permanent, or twelve-year molars, and, in the majority of cases, they will appear in the year which gives them a name; but I have seen them at ten, and in other cases they have not appeared at fourteen and even fifteen, so the age is not always a reliable guide. It is, however, safe to say that if there has not hitherto been any pressing need for a visit to the dentist, the thirteenth year should not be allowed to pass without a thorough professional examination of the mouth: for at this time it will be necessary for the dentist to judge whether it will be possible for him to save all the teeth, or sacrifice an upper and lower one on each



side of the mouth, in order to give more space, and therefore more safety, to those which remain.

After all I have said about extractions this will, no doubt, seem a startling suggestion, but you must remember that, although I have said extraction was not necessary for the cure of toothache, I have not said we could do altogether without it. It is an operation which only exceptional circumstances will justify, and which should never be resorted to, in hap-hazard fashion, to cure pain, or without a careful look at what may be the future result to the general arrangement of the other teeth, so that when it is done it will be a benefit to the whole mouth rather than a loss to any particular part. Between the twelfth and sixteenth years, while the frame is growing, and the constitutional changes natural to that age are going on, the teeth are more liable to decay than at any other time of life. In many cases the utmost we can do at this time is to keep the teeth from being so weakened by decay that breakages and restorations shall not spoil the appearance of the mouth for life. Parents constantly speak of their young people's teeth as extraordinary and remarkable, because they want so much done to them at this time of life ; but it is the critical time when nearly all the mischief which spoils the mouths of our young men and women is done. Neglect now is fatal ; yet, unfortunately, boys and girls have not learned to care enough about personal appearance, even now, to induce them to take such interest in, and trouble about, their teeth as must be taken to



save for them nice-looking mouths and comfort with their teeth. When the twelve-year molars are fairly through the gum the jaws will have reached the point of growth which we have been so anxious to realize by avoiding all premature extractions and unnecessary interference with nature's methods ; but when we have got so far we must think still of the future. What are these teeth to be five or six years later if they are already showing signs of decay. If they are not crowded we may have good hopes of keeping them by fillings ; but if they are crowded—if they lack density of structure—if the family is not remarkable for good teeth—if the strength is not keeping pace with growth—it is better to decide at once to sacrifice some of the teeth for the sake of the rest. Isolation is the best possible safeguard against decay, and the nearer approach we can make to perfect separations between all the teeth the better will be our chance of preserving them. By extracting a tooth from each side of each jaw, and doing it just after the twelve-year molars appear, we allow all the other teeth to fall slightly apart for the time, when, as is often the case, nothing but separations will save them, and we make room for the early development and eruption of the wisdom teeth, which will, in due time, press all the other teeth together again and close up the gaps made by the extractions, but only after the period of danger is past. It is no use to wait a year or two, until the mischief is done, and then extract, for we shall gain nothing by this, and we lose everything. We lose



the advantage of the separations—we lose the chance of giving plenty of space to the wisdom teeth, so as to make them useful, serviceable teeth—and we lose the closing up of the gaps made by the extractions. We must be careful, too, to select the right tooth to extract; but, unless there are very decided indications pointing to other teeth as more likely to do good by their absence than by their presence, the six-year molars will be the best selection. The teeth extracted must always be opposites: that is, whichever tooth we decide to extract in the one jaw we must take that which antagonizes with it in the other jaw. We must not select a bad tooth in the one jaw and a bad tooth in the other merely because they are bad, and without studying how it will affect the occlusion of the remaining teeth, and the future closing up of the gaps, for we do not intend to have any permanent

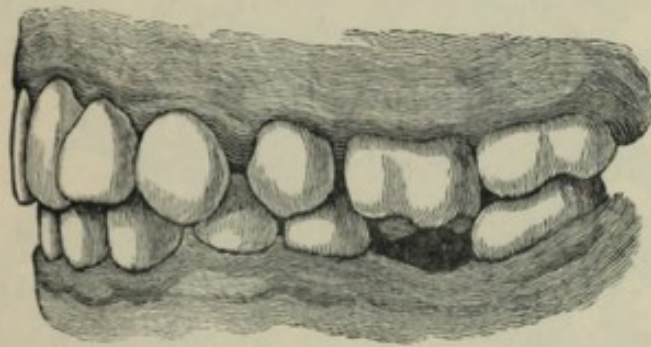


Figure 15.

gaps. The illustration (Fig. 15) here given shows the effect of these hap-hazard extractions. A six-year molar has been taken out of the lower jaw, and a bicuspid out of the upper, with no possible gain to the lower jaw, because the upper tooth, having nothing to meet it, has at once lengthened down until



it acts as a wedge to keep the lower gap always open, and the only gain to the upper jaw is the separation on each side of the remaining bicuspid.

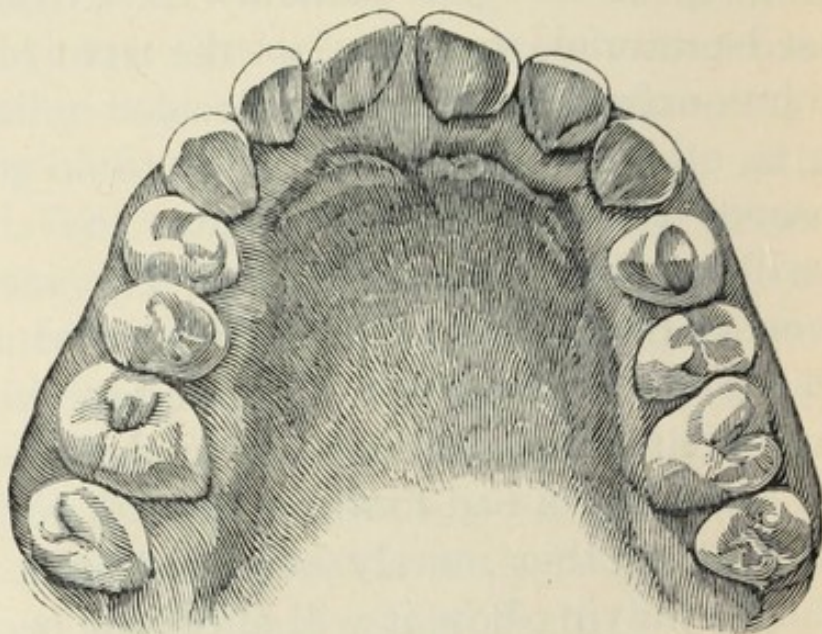


Figure 16, *a*.

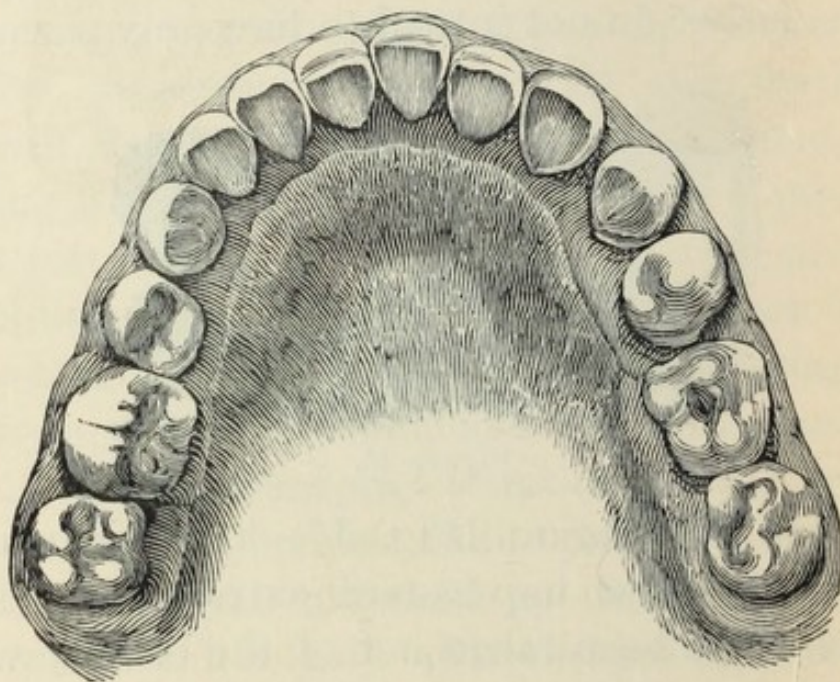


Figure 16, *b*.

The next illustrations (Figs. 16, *a*, *b*,) show the condition of upper and lower jaws at sixteen, the six-year



molars having been extracted at twelve. The wisdom teeth are in position, the gaps closed up, and although the young lady from whose mouth the casts were taken has not inherited good teeth, they have been preserved from anything like disfiguring decay by constant care at home.

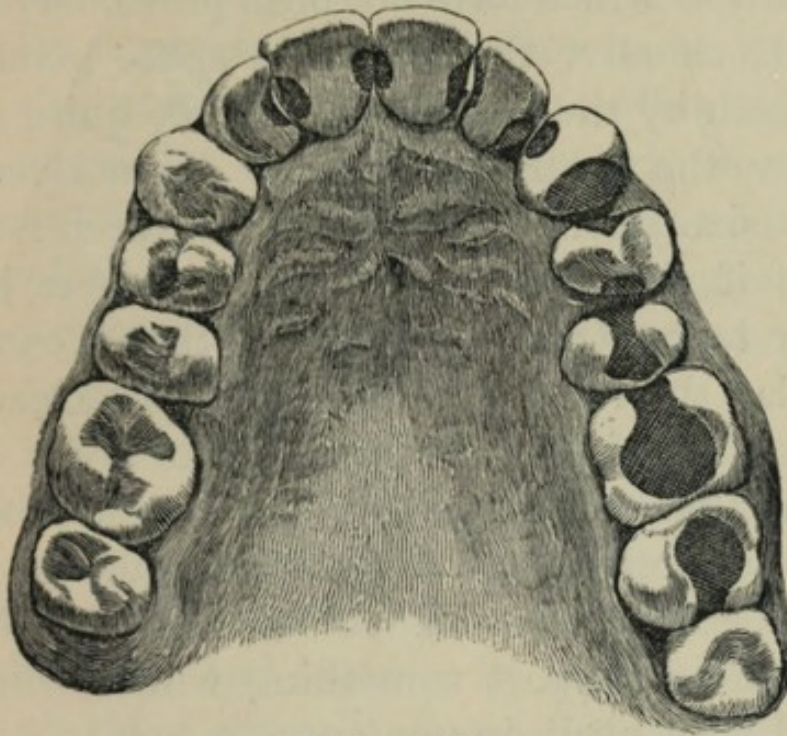


Figure 17.

One more illustration (Fig. 17) of this subject is a case where a boy of twelve, getting toothache at school, had the six-year molars taken out on one side of the mouth, and as they were not so bad on the other side the dentist filled them. The result is that, on the one side, where the teeth were extracted, there is literally no decay, except in the incisors, where it had probably commenced before the extractions; while, on the other side, where the teeth were retained, every tooth is filled on the approximating



surfaces and across the grinding surface. The dark patches represent the larger fillings. Of course, in this case, both sides of the mouth were subjected to the same influences in every way except in the matter of space.

This is also the time for the treatment of any irregularities which have not been previously attended to; but, usually, the increased space given to the other teeth by the extractions will be quite sufficient to allow the teeth to arrange themselves if the relative size of the upper and lower arch is normal: that is, if the upper arch is everywhere just perceptibly larger than the lower, so that it can be seen to overlap the lower when the teeth are closed.

Boys and girls are always liable to break the front teeth in their rough games, but it must be a very serious accident indeed to justify extraction, for if the root can be preserved it can always be made servicable to support something which will fill the gap and prevent disfigurement.

I have now said enough to show mothers who feel any interest in this subject, that it is to them we must look for the care and attention which only can secure to the rising generation a better condition of teeth than we see in the mouths of our contemporaries. The responsible work must begin, continue, and end at home. The dentist can only assist you in your efforts, and it is for you to see that his advice and skill are not thrown away, as they will be unless they are backed up at home by personal cleanliness, by encouragement, by constant teaching, and by



persistent watchfulness, until the young mind can realize what it is all intended to secure. It is not a pleasant task for the dentist to tell patient after patient that their mouths are neglected, if not filthy, and, perhaps, he too often fails to speak the unwelcome words; but if cleanliness, which the instinct of the savage teaches him is necessary and comforting, is strongly impressed on the infant mind, it need not be that the civilized European (who thinks his daily bath a necessity, as well as a luxury) should have the remains of last week's dinners in and about his teeth, and then be astonished and indignant to find that those important organs cannot be made to last as long as he wants them.

I do not believe that we need drift into the edentulous condition which some of the scientists predict for the future man, nor that this toothless condition need be anything like so common as it is now with men and women in middle life, and too often with those scarcely out of their teens; but the foundation for an improved structure must be laid in childhood, and kept in perfect repair while the building is going up, not, as is too often done, by leaving the management of the early work to the jerry builder, and only calling in the first-rate architect after the superstructure has crumbled into ruins.

“PREVENTION IS BETTER THAN CURE.”

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