

**The family dentist : containing a brief description of the structure, formation, diseases, and treatment of the human teeth / by Josiah F. Flagg.**

**Contributors**

Flagg, Josiah F. 1788-1853.  
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**Publication/Creation**

Boston : J. W. Ingraham, 1822.

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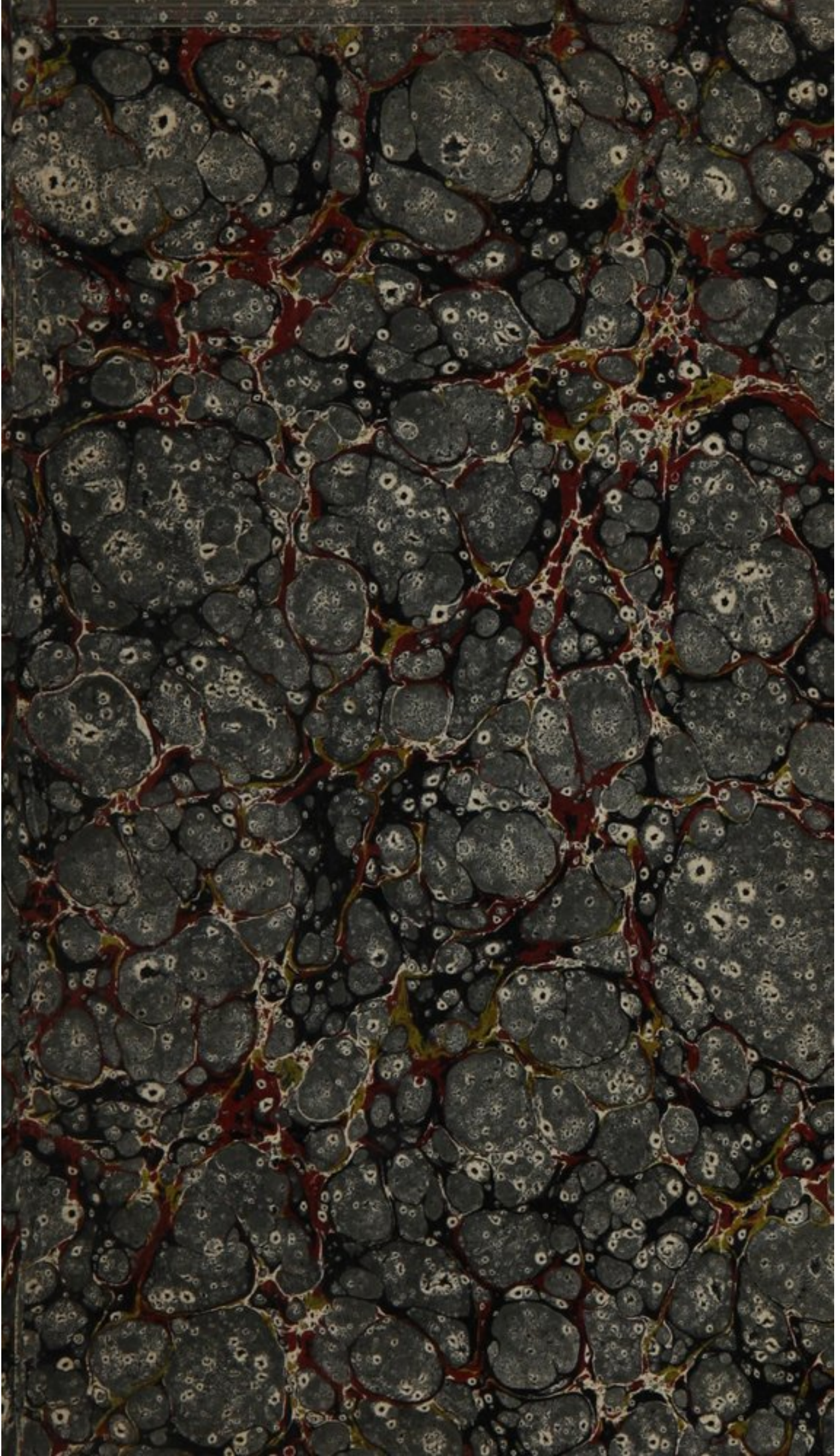


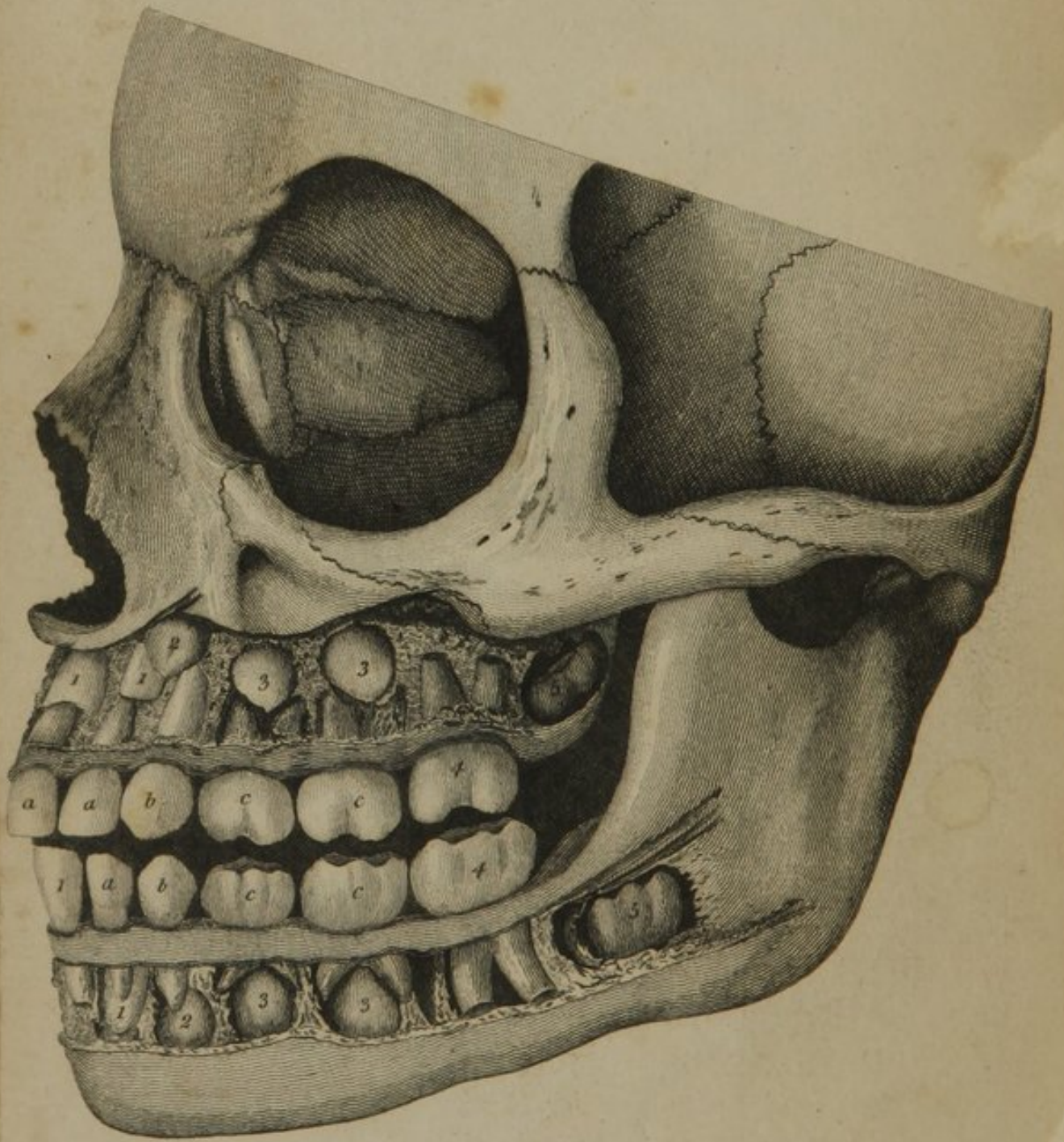
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THE  
FAMILY DENTIST;

CONTAINING

A BRIEF DESCRIPTION

OF THE

STRUCTURE, FORMATION, DISEASES,  
AND TREATMENT

OF

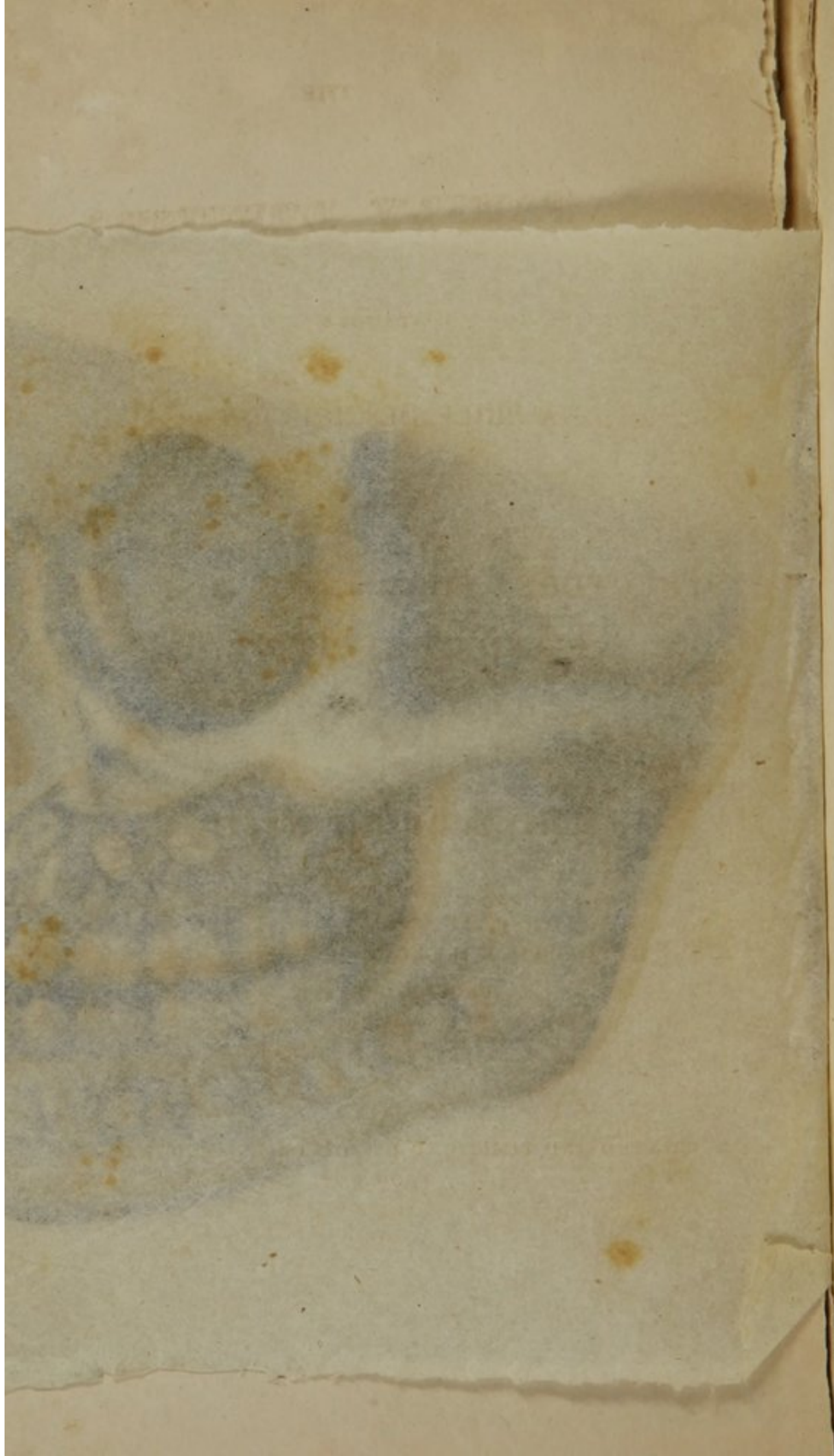
The Human Teeth.

BY JOSIAH F. FLAGG, M. D. M. M. S. S.  
SURGEON-DENTIST.

BOSTON.

PRINTED AND PUBLISHED BY JOSEPH W. LINSLEY, JR.

1822.



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The objects of the following pages are, I. To give, in as few words as possible, a clear description of the structure and for-

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mation of the teeth; and to bring to view those circumstances connected with their growth, with which it is important for every individual to be acquainted.

2. To give a brief sketch of the most common diseases to which the teeth are liable; together with such directions, relative to their treatment and preservation, as shall enable the reader to take the necessary care of his own teeth; and, if a parent, to pay proper attention to the teeth of his children.

3. To guard against the injurious practice of ignorant operators; and to remove some of those popular prejudices which prevent many from adopting the only mode of treatment calculated to diminish the liability to disease in these useful and important organs.

### DESCRIPTION OF THE PLATE.

THIS engraving is a representation of the bones of the face, in which the first and second sets of teeth are so exposed as to show their relative situation in both jaws, as they are found in a child at about the age of six or seven years.

The preparation from which the drawing was taken, had all the flesh removed, and the outer plate of the alveolar processes sawed and cut away in such a manner as to bring to view the fangs of the temporary teeth, and the crowns of the permanent set which were beneath them.

*a. a. a.* Three front teeth of the first set, the other had been shed.

*b. b.* The canine teeth of the first set.

*c c. c. c.* The double teeth, or grinders of first set, their fangs being partly absorbed.

1. 1. 1. 1. The crowns of the front teeth of the permanent set, one of which, in the under jaw, is fully advanced, and is in the place of the temporary tooth which has been shed.

2. 2. The crowns of the permanent canine teeth.

3. 3. 3. 3. The crowns of the double-pointed teeth, or small grinders of the permanent set.

4. 4. The first large grinder or double tooth in each jaw, the fangs of which are not fully formed. [It is owing to the early appearance of these teeth beyond the temporary grinders, that many persons are deceived, and suppose they have never shed all their double teeth.]

5. 5. The crown of the second large grinder, or double tooth, in each jaw, still deep in its socket, the formation of its fangs not having commenced.

The subject was too young to allow of exhibiting the rudiments of the wisdom teeth, or third large grinders. These are formed still farther back than the others.

2. The line between the double  
 tooth in each jaw, the line of which is not  
 fully formed. It is owing to the early ap-  
 pearance of these teeth beyond the tempor-  
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THE STRUCTURE, NUMBER, AND  
FORM OF THE TEETH.

In order to render the description of the teeth, and of their diseases, as clear and comprehensive as possible, anatomists have considered a tooth as divided into three parts or sections; first, the body or crown; second, the neck; and third, the root or base.

The whole of that part of a tooth which is generally exposed to view, when the gums are in a healthy state, is called the crown. The part which is immediately embraced by the gums, and to which they are united, is called the neck. The third section or part, in all that part which is

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found buried in the socket, when the bony process, of which the socket is formed, is in a perfect state.

The hard or bony structure of the teeth is described as consisting of two substances; one of a dense osseous nature, much harder than that of any of the other bones, and of which are formed all the internal parts of the crowns, the whole of the necks, and also the fangs of the teeth. The enamel, or external covering, is the other hard substance, which, however, forms only a part of the crown. It is of a peculiar nature, possessing a hardness and density exceeding that of any other substance in the whole body, and covers the crowns of all the teeth, but is seldom in any part more than a line in thickness. It is thickest, at those parts which are most exposed to use; and thinnest, at those nearest the gums.

The teeth, like the other bones, are hollow, having a cavity in their crowns, corresponding, in form, to the external part of the tooth, and a canal in each fang, extending from this cavity, and terminating by a small opening in the point of the fang. These cavities, however, are not, as is commonly supposed, for the lodgment of marrow, as in the other bones, but to give place to

blood vessels and nerves, on which the teeth depend for their nourishment and sensibility.

The dimensions of these cavities are found to vary, according to the degree of perfection attained in the formation of the teeth; being greatest in those which are very young, and becoming gradually smaller, till their formation is completed. In the teeth of adults, they become still less, as the individual advances in years, so that in those of very aged persons, these natural cavities are often found to be entirely closed, or filled by solid bone.

Of the two sets of teeth with which the human jaws are successively furnished, the first are called the temporary, infant, or milk teeth; and the second, the permanent or adult teeth. There is most commonly a difference in the number which composes these two sets, the first containing twenty, and the second thirty-two. The number in the second set is often found to vary, being in some greater, and in others less; but this variation seldom occurs in the first set.

Both sets are divided into classes. In the first set, there are, in each jaw,

1. Four *Incisores*, or front teeth, two on each side

2. Two *Cuspidati*, eye teeth, or canine teeth, one on each side.

3. Four *Molares*, grinders, or double teeth, two on each side.

The front, and canine teeth, are succeeded, in the permanent set, by teeth of the same denomination; but the grinders of the first set are followed in the second, by

Four *Bicuspides*, double pointed teeth, or small grinders.

In addition to which there are in this set, a fourth class, viz.

Six *Molares*, large grinders, or double teeth, three on each side; the last of which, on each side, is called wisdom tooth.

The teeth of both sets, or those of the same class, in both, bear a strong resemblance to each other; so that, in many instances, at the period of shedding, the teeth of one set have been mistaken and extracted for those of the other.

The roots of all the front and canine teeth, in both sets, are single, and generally straight and tapering; and those in the upper jaw are commonly the longest. The fangs of the small grinders, (*bicuspides*,) are flatted and thin, often a little crooked and tapering, and generally some of them forked

at their extremities. All the double teeth, (*molares*,) in both sets, have, in the under jaw, two fangs, and in the upper one, three; two of these being fixed towards the outer edge of the jaw, and the other towards the roof of the mouth or palate. In many instances, however, the grinders of the upper jaw have four, or even five, fangs; and those of the under jaw, three. And on the contrary, some of these teeth, which are generally designed by nature to have two or three fangs, are found with but one.

## ARTICULATION OF THE TEETH.

The teeth are connected with the jaws by the means of sockets, which are formed to receive and fit each particular fang, and by intermediate membranes, which serve at once for linings to the sockets, and coverings to the fangs; so that the roots of the teeth are not immediately articulated or joined to the bony sockets, but are united by these membranes.

The sockets which receive the teeth are formed of thin plates or processes of soft spongy bone, which, while they embrace the fangs of the teeth, serve as a support to the gums. These plates of bone, which are



called *alveolar processes*, are produced, and increased, with the formation and advancement of the teeth; and there is such a mutual dependence of the teeth and these processes on each other, that a tooth is no sooner removed, than a wasting of the process commences, and all traces of a socket soon disappear. And on the contrary, when this dissolution and absorption of the processes are first effected, as is often the case in consequence of disease, the teeth immediately become loose and painful, and the patient is almost constantly afflicted till they are wholly removed. Thus it appears, that where there are no teeth, there can be no alveolar processes, and where the alveolar processes are destroyed, the teeth can no longer be preserved.

These bony sides of the sockets are covered like the rest of the jaw, by a thick strong membrane, called *periosteum*, which contributes greatly to support and strengthen them. The gums are next spread over this periosteal covering; and these again are invested by a very delicate membrane, which is continued over the lips, tongue, and throat, and is indeed the immediate lining of the mouth. All these soft parts, which cover the sockets of the teeth, are so intimately united

by the intermixture of their fibres and vessels, that they cannot be distinctly separated by the knife, and appear, on dissection, like one uniform and homogeneous substance.

These parts, and the membranes which connect the teeth with their sockets, serve for the transmission of innumerable small vessels, which go to nourish the jaws and teeth. Vessels and nerves of considerable size enter the jaws, and pass in channels at the deepest part of the sockets, where they supply the fangs of all the teeth with small branches; and in this way the cavities of the teeth are furnished with arteries, veins, and nerves, that enter at the fangs by the small openings in them, which have been mentioned above.

## FORMATION OF THE TEETH.

WHEN the rudiments of the teeth are first discoverable, they are small gelatinous or pulpy bodies, enveloped in thin membranous sacks, and arranged in a sort of excavation or groove in the jaw, which at this time is but imperfectly formed. Bony fibres then shoot across this groove, and separate it into distinct cells, each of which contains its proper pulp, or embryo tooth, invested in its membrane. At the time of birth, the formation of the temporary teeth has generally so far advanced, that the pulps have attained their full size, and ossification has extended over their surfaces in such a manner as to form complete bony shells of the size and figure of the crowns of the teeth; and the pulp of the first permanent grinder, on each side of both jaws, has acquired a considerable magnitude. After this the pulps begins to elongate, in order to form the fangs, and the process of ossification is continued for the same purpose till they are completed.

While this process is going on at the roots, another is progressing at the crowns, by which an earthy substance is deposited on their surfaces, and gradually formed into that highly polished and beautiful covering, called the enamel.

And while these changes are taking place, the teeth are gradually rising, the alveolar processes which are to support them, are increasing in height, and the membranous envelopes are dissolved and taken up by innumerable absorbing vessels, and carried into the mass of blood, having effected the purpose for which they were formed. After this, the gums, or those parts of them which are situated immediately over the teeth, are also absorbed, and the advancing teeth are allowed to rise into view.

The age at which the teeth begin to appear, is usually that from the sixth to the eighth month; sometimes earlier, and often much later. They generally advance in pairs, and in the following order:

1. The two central front teeth of the under jaw, which are soon followed by the corresponding ones in the upper jaw.

2. The two next front teeth, or lateral *incisores* of the under jaw, which are succeeded by the corresponding upper ones.

3. The smallest double teeth, first in the under, and then in the upper jaw.

4. The under canine teeth, which are followed by the upper ones, called the eye teeth.

5. The largest double teeth. These also appear in the same order, with respect to the jaws, first in the under, and then in the upper one. They often pass through the gums at about the same time that the canine teeth do, and sometimes before them. At other times, the canine teeth precede even the smaller grinders in their advancement.

Though this is the order in which these teeth generally appear, various circumstances produce the greatest irregularity in this process. The time which is occupied for their advancement varies much, though it is usually a period of about eighteen months, or two years.

#### FORMATION OF THE PERMANENT TEETH.

The formation of the second set of teeth, is one of the most curious and interesting processes which is effected in the development of any part of the human frame.

While the temporary teeth are forming,

and soon after ossification has commenced on their pulps, the rudiments of the permanent set may be discovered. They are connected with the membranous coverings of the temporary teeth, and are contained in the same sockets with them. When the first set advance to their destined situation, this connexion is not destroyed, but the permanent teeth are left deep in the jaw, and bony partitions are formed between the sockets of the two sets. At a certain period after the crowns of the permanent teeth are formed, the partitions of bone, which separate them from the sockets of the other set, are absorbed, and they gradually rise and occupy the space thus formed. To give place to these teeth, the fangs of the temporary set are then absorbed; and in this way their crowns are finally deprived of all support, except a slight attachment to the gums, and are often removed by the ordinary pressure of the tongue against them.

post that all parents should be acquainted with the situation of the vessels of teeth in relation to each other, and with the changes which take place within the period of their second eruption.

**SHEDDING THE TEETH.**

**T**HE provision of nature for exchanging the two sets of teeth, is as much calculated to excite our admiration, as the process by which they are formed. And there is no period at which the teeth of children require more, if so much, attention and care.

If the fangs of the temporary teeth be slowly absorbed, the permanent teeth will generally come forward so as to appear as soon as the corresponding ones of the preceding set are shed; and in a majority of cases, without doubt, the whole process is performed by nature with such perfect regularity, that the interference of art would be at best but useless. In some cases, it would be detrimental to the forming and rising teeth; and in others, injudicious and cruel, from the unnecessary infliction of pain. Yet there are so many cases in which irregularity and deformity, with their usual consequences of disease and suffering, are produced, by the manner in which the permanent teeth are allowed to advance, that it is highly im-

portant that all parents should be acquainted with the situation of the two sets of teeth in relation to each other, and with the changes which take place within the period of the second dentition.\* For it is only by their knowledge of these, that they can be enabled to judge correctly when it is proper for them to interfere in removing the temporary teeth, and when it may be expedient or necessary to apply for the advice and aid of an experienced and judicious dentist, to prevent the evils which often result from neglect or ignorance.

If the permanent teeth are discovered to be emerging from the jaw in such a manner that their position will be improper and injurious, or if they are inclined to any irregularity arising from the disproportionate growth of the teeth and jaws, much may be done to prevent it by a seasonable removal of the temporary teeth; but this should not be done by any who are ignorant of their liability to do mischief by taking the wrong teeth, or by extracting them too early, or

\* For this purpose, and in order to illustrate the descriptions which have been given, an engraving is prefixed to this work, representing the two sets of teeth as they are situated at the time the shedding process commences.



by removing loose teeth only, when there may be the greatest necessity for extracting such as are perfectly tight, and in which the process of absorption has hardly commenced.

It is a very common opinion that the first teeth have no roots, and that they may therefore be extracted without injury, at any period. But nothing can be more incorrect; for the teeth of a child have longer and larger roots, in proportion to the size of their crowns, than the teeth of an adult; and their connexion with the forming teeth of the second set, at an early period, is such, that if they be extracted too soon, the violence done to the tender teeth beneath them may be so great as to prevent their formation from being completed, and they may never appear.

Another prevailing opinion is, that the temporary teeth should always be extracted as soon as they are discovered to be loose; and though this may generally be done without any bad effects, it is not so necessary as has been supposed, and in most instances is a useless interference; and exposes children to suffer both fear and pain, which might as well be avoided; for the looseness of these teeth, as has already been shown, is occasioned by the absorption of their

fangs; and there can be no surer evidence than this, that nature is doing her own work in due season, and needs not the aid of art to expedite it, or render it more perfect.

It is not by removing teeth which are loose, but those which are firm, and have their fangs nearly or quite entire, that any advantage is obtained which will favour the regular advancement of the permanent set. The best advice, therefore, that can be given on this subject, to parents, and those who have the care of children, is to examine the teeth frequently, about the usual period of shedding, (the sixth or seventh year;) and if any of the second set begin to make their appearance, or there is an evident swelling of the gums at the part where any of them are expected to appear, a sufficient number of the first teeth should be extracted to allow a sufficient degree of room for the second, which are coming forward.

From what has been stated, however, it will readily be seen, that when the temporary teeth have become very loose and troublesome, they may be extracted indiscriminately, and by any person; but when they remain firm, and the teeth of the second set are

coming forward in such a manner as to lap over each other, or appear in a double row, it is of the utmost importance to remove them, whether the process of absorption has commenced at their fangs or not, in order to give room, and restore regularity to the rising teeth.

It should be remembered, with regard to the examination of the jaws and teeth at the time of shedding, that all the teeth which are to succeed the first set, if they come forward too soon, or before the temporary teeth become loose, will be discovered behind them, or on the inner side of the jaw, excepting the *cuspidati*, which will be found advancing on the outer side of the jaw. It sometimes happens, also, that when the temporary grinders have been very early removed, the *bicuspidés*, or small grinders, of the second set, make their appearance on the outer part of the jaw, next the cheek. This is most common with the upper ones.

All cases of great irregularity, which may generally be discovered before the teeth have risen far above the gums, and often as soon as they appear, should without delay be placed under the care of an experienced

dentist; for the limited knowledge which parents usually obtain, from the few cases which come under their observation, is not sufficient to enable them to judge what is proper to be done, with that degree of correctness which the nature of the subject requires.

### THE FIRST DENTITION.

**T**HE age at which the first teeth begin to appear, varies very much in different children. This is caused by various constitutional peculiarities; sometimes it depends on the general vigour of the system, when there is no predisposition to disease of any kind. It may likewise depend on the influence of various morbid principles which have been inherited from the parent, or on that of diseases produced by various external causes. Children of the most robust and healthy constitutions, do not always begin to cut their teeth earlier, or get through this process in a shorter time, than many others that are of a more sickly and feeble habit; yet the former are much less liable than the latter to suffer from the pains and diseases to which children are exposed during the period of dentition.

“The common expression of *cutting the teeth*, has arisen from an opinion, that the growing teeth make a passage for themselves through the gums by laceration; which certainly is not the case. As the teeth rise, a waste or absorption of the gums takes place,

in order to let them pass through. This is often effected so easily as not to occasion any symptoms of pain or uneasiness. The absorption of the gums, to make way for the teeth, is as certain an effect of nature as the growth of the teeth." In many cases, however, the rapid advancement of the teeth, and the changes which must necessarily take place to produce it, produce also much disturbance about the jaws, and in the system generally. "The gums appear swollen and inflamed, there is an increased flow of saliva, the infant is restless, cries, and frequently puts its hands to its mouth." "From the effects of local inflammation and nervous sympathy, the whole body may become dangerously affected; in such cases, the most sudden and happy effects have been produced by lancing the gums." This operation is a very simple, but not an unimportant one; it is often attended with the most unexampled benefit to the child, and should never be neglected when required.\*

"Whatever contributes to promote the healthful operations of nature, will make teething easy; such as frequent bathing in warm [or cold] water, [according to circum-

\* See observations on the mode of performing the operation.

stances,] friction of the body and limbs, good air, exercise, and wholesome food; and above all, a cool and open habit of body. The gums should be rubbed with the finger, and the child should be allowed the use of its own fingers in its mouth. The idea that a child's sucking its fingers will prevent their growth, is a prejudice without foundation in truth."

"The old and erroneous opinion, that the teeth, as they grow, cut their way mechanically through the gums, first suggested the idea of assisting them in their protrusion, by the friction and pressure of hard substances;"\* and hence arose the cruel and hazardous practice of scratching the gums through with the finger nail, or with pieces of hard loaf sugar, a practice which has too often been the cause of severe local and general suffering, if not of death, from the inflammation, fever, and spasms, which it has contributed to excite. Hence also the use of the coral and other hard smooth substances given children to bite; which, as has been observed by Dr. Blake, "are most dangerous instruments put into the hands of children to destroy themselves; for as the teeth rise, and become

\* Murphy's Natural History and Diseases of Teeth, pp. 51—53.

slightly elevated above the edges of their sockets, those hard substances press and bruise the gum between them and the sharp points, or edge of the tooth underneath : inflammation and its consequences undoubtedly follow ; and in this way, I am fully persuaded, the lives of thousands of children are lost.\*

The second dentition, or protrusion of the permanent teeth, is seldom the cause of any suffering, except when the last grinders, or *wisdom-teeth*, as they are called, are passing through the gum, being at the same time situated further back than usual, and in such a manner as to present their pointed surfaces towards the cheek ; in which case, the motion of the jaw in mastication, occasions such a degree of pressure on the gums and surrounding parts, as to produce much irritation, often a considerable degree of inflammation about the jaw, and even ulceration. These circumstances sometimes render it necessary to extract these teeth, though in most cases they may be preserved, and the troublesome complaints removed by cutting away a small portion of the inflamed gum over the teeth, or by other timely and judicious treatment.

\* Dr. Blake's Essay on the Teeth of Man and other Animals, p. 127.



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DISEASES ATTENDING DIFFICULT  
DENTITION.

IN infancy, every part of the system is highly susceptible of morbid impressions, and one set of organs readily become diseased through sympathy with another.

Among the diseases to which children, while teething, are liable, are, general irritation, or fever of an inflammatory kind, eruptions on the skin, diarrhœa, dysentery, cholera, inflammatory affections of the lungs and throat, swelling of the glands about the throat and neck, spasmodick affections of the limbs, and often convulsions of the whole frame.

What has commonly been called the fever of teething children, makes its appearance several times in the course of the period occupied for cutting the teeth; often commencing very suddenly, and marked by a dulness and heaviness of the eyes, unusual heat of the skin, quickened respiration, coated tongue, loss of appetite, and restlessness.

When these cases occur, it will be proper for the parent or nurse to administer some mild emetick, or gentle cathartick medicine,

and place the little patient for about ten minutes in a warm bath, as high as the waist. But if these do not give relief, and remove the principal symptoms of the complaint, no delay should be allowed in calling medical assistance. The doubtful aid of inexperience should no longer be trusted.

When there is an eruption, which has become in any degree troublesome, the parts should be carefully washed once or twice a day with Castile soap suds, or warm milk and water, and covered with hair powder, or dry wheat flour; or smeared with olive oil, and covered with lint. No medicated ointment applied with a view to dry up, or scatter the eruption, should be used, or can be used with safety, without previous medical advice.

The bowels of infants, while they are teething, are not unfrequently affected in such a manner as to produce the most alarming consequences in a very short time. Sometimes, however, they remain in a diseased state for several weeks; the child at the same time continuing lively and playful, with a good appetite; so that the sympathetick affection of these parts appears to be but a salutary effort of nature, to relieve the system from other and more serious difficulties, or to prevent their occurrence.

The very common practice, both of mothers and nurses, of dosing infants that are suffering under diarrhœa or dysentery, with paregorick, anise, burnt brandy, and sugar, and various astringent preparations, cannot be too seriously condemned. It is a practice which but too often serves to drive to a fatal close, a disease which, if it had been treated by a skilful hand, or even left to the kind efforts of nature, might have been conducted to a happy termination.

Concerning most of the other diseases which have been enumerated, few parents possess a sufficient degree of knowledge of them, to be enabled to determine what is best to be done ; and, indeed, the anxious concern which most parents feel for their suffering offspring, generally unfits them, more than any other circumstance, for a calm and deliberate exercise of their judgment.

Delay in giving the attention which is often required by children, when they begin to suffer from teething, is a fault of too common occurrence, and of too inexcusable a nature, to be passed wholly unnoticed. The various maladies which attend the age of infant dentition, should not be suffered to prey on the constitution, while the too often fallacious hope is cherished, that all will be well when

the child has finished cutting its teeth ; for, changes are not unfrequently produced in the system, which effect a lasting injury, and prevent the enjoyment of perfect health through the remainder of life. Duval, in his remarks on dentition, and the accidents and diseases which in many cases attend it, observes : “ It may be asked, does the cutting of the milk teeth require the aid of the dentist ? Certainly not ; it is generally a benign operation ; but there are cases in which maternal solicitude has need of counsel ; and the physician as dentist, or the dentist who is a physician, in this case will show what is requisite to be done.”\*

In almost every complaint attending difficult dentition, the operation of dividing the gums with a lancet over the rising teeth, is of very great importance, and cannot be too strongly recommended ; for, in many instances, it prevents the necessity of employing any other remedy, and often exceeds all others in efficacy. In cases of great inflammation about the gums, attended with fever, the operation is often followed by the sudden cessation of pain, and the

\* Duval's Treatise, entitled *Le Dentiste de la Jeunesse*, Atkinson's translation, p. 49.

mitigation of every symptom of irritation; in diseases of the bowels, by the perfect removal of the most distressing symptoms, and a speedy return of the healthy action of the parts; and in spasms of the limbs, and general convulsions, by the immediate interruption of the paroxysms, and a prevention of their recurrence. Its salutary effects are so powerful and decisive, that in all painful cases of dentition, marked by evident swelling and inflammation of the gums, it should be performed without delay.

The prejudices which still exist against the operation, greatly prevent the extension of its usefulness; but it is one which is perfectly simple and safe, when performed by any one acquainted with the anatomy of the infant jaw, and the relative situation of the two sets of teeth. The accidents which have been known to follow it, are among the common fruits of ignorance and presumption. It is so far from being painful or cruel, as is by many supposed, that infants, which a moment before were writhing and crying with pain, are sometimes known to laugh in the face of the operator before he has finished the incision; so sudden, and so great, is the relief which they experience.

## DISEASES OF THE TEETH.

THE diseases to which the teeth are subject, attack them in various ways, and present very different appearances. In some instances, owing to the peculiar nature of the disease, or the constitution of the teeth, they are destroyed without causing any considerable degree of suffering, or giving rise to any disease of the surrounding parts; in others, not only the teeth are affected in the most troublesome and painful manner, but the diseases originating in them, are extended to the gums, palate, tongue, and other parts of the mouth, producing fungous and fleshy tumours about the gums and cheeks, deep-seated abscesses, and caries of the bones.

The teeth, owing to their particular nature and situation, are subject to some diseases which are peculiar to them, and to others, which are of a character very similar to that of the diseases which affect other bones. They are also, like most of the other bones, liable to fracture, dislocation, and other accidents. Hence it must

be evident, that in some instances, they will require a peculiar treatment, while in others the same surgical principles must be adopted, which are observed in the treatment of diseases and accidents of the other bones.

#### CARIES OR ROTTENNESS.

The first disease to be mentioned, and that which is by far the most common, is caries, or rottenness of the teeth. This commences in different parts of the teeth, and is produced by several causes. It sometimes commences in the internal part of the crown, and gradually extends till much of this portion of the tooth is destroyed. The enamel is rendered thin by the progress of the disease within, and finally breaks by a very slight pressure. In other cases, its first effects are discovered on the enamel, which is discoloured, and becomes of a black or brown appearance; its substance is decomposed, and in many cases it cleaves from the bony portion of the tooth, by which the progress of decay is for a long time arrested; but more frequently, when suitable means are not adopted to prevent it, it soon extends from the enamel to the softer and more sensibly organized parts of the tooth.

In all cases, black and uneven cavities

are produced, which serve to give lodgment to particles of food; and these, mixing with the fluids of the mouth, readily undergo a putrefactive process, and hasten the destruction of the teeth.

By the progress of caries, also, the principal nerves, which supply the natural cavity in the tooth, become exposed not only to sudden changes of temperature, but to pressure from mastication, to the irritating contact of the tooth-brush, tooth-pick, and other substances; and hence, pain and inflammation are produced, and the extraction of the tooth very commonly becomes the only means of preventing continued suffering.

#### CAUSES OF CARIES.

This affection of the teeth is the consequence either of internal constitutional causes, or of those which are external and adventitious, and very commonly of both. Caries of the teeth, and even that of a peculiar character, has been so often traced through whole families, from one generation to another; that this disease must be considered hereditary, as much as any to which the human system is liable. In numberless cases, caries appears to be the effect of some serious disease with which the



individual had been afflicted while the teeth were in the early stages of formation. With regard to the local or external causes, they are most commonly found to be collections of earthy and other foul substances, which have been suffered to form and collect about the teeth, and also the use of injurious tooth-powders and washes.\*

#### TREATMENT OF CARIES.

Although some teeth are so constituted as to possess but little durability, and after the destroying power of caries once begins to operate on them, they go on rapidly to decay, in spite of all the aid which science and skill can afford; still, there are comparatively but few instances in which reasonable and judicious treatment will not arrest the progress of disease; and even render teeth serviceable for many years, which, if neglected, would soon be entirely destroyed.

In the treatment of carious teeth, it is of the utmost service to remove, by means of suitable instruments, the whole of the decayed portion in all cases, leaving at the same time as much of the sound part of

\* See observations on cleaning the teeth, and the use of improper substances for this purpose.

the tooth as possible. If this be not done, little if any service is rendered by any operation; and the teeth go on to decay in the same manner after it has been performed as before. The surface of the tooth, where the decayed part is removed, should be left perfectly smooth, and if excavated, only in such a degree, that by the proper use of the tooth-brush, the lodgment of particles of food and other substances may be wholly prevented.

Another mode of treating caries, and which most effectually prevents its increase, is that of filling the excavation, which has been formed by disease, with pure gold, or some other metallick substance. This operation, when properly performed, will generally preserve the teeth from ten to twenty, and sometimes even thirty years, in a sound and serviceable state; while at the same time it prevents all those unpleasant and painful occurrences to which a carious and hollow tooth, is constantly exposed.\*

\* The author has witnessed the salutary effects of this practice, in cases where the teeth had been filled with gold, for twenty and thirty years. In operations of his own, teeth have stood the test of twelve years without any apparent alteration; and cases are recorded, in which the gold has preserved teeth in a perfectly sound and useful state, for a period of forty years.

When by caries the natural cavity is laid open, and the principal nerves are exposed, the tooth often becomes too tender to bear the pressure occasioned by mastication, or the sudden changes of temperature, and it becomes painful from the slightest causes. After the disease has proceeded thus far, the teeth may often be saved by filling them with gold, the nerves which supply the natural cavity first being destroyed. This the patient may do gradually, by carefully cleansing the cavity of the tooth of every thing which may be lodged in it, and applying a little lint soaked in some essential oil, as that of cloves or cajeput, which, if renewed two or three times a day, will, in a short time, have the desired effect. The nerves of such teeth are also sometimes destroyed by the dentist, in a more expeditious manner, by the use of strong mineral acids, or by instruments designed for this purpose.

Although, from the time of the earliest writers on diseases of the teeth, the operations of sawing and filing those which are carious have been recommended, and practised, they are seldom of service, are often injurious, and, in most instances, to say the best of them, are ineffectual and useless. The particular objections to them, will be

noticed in some subsequent remarks on these operations.

DISEASES OF THE FANGS OF THE TEETH.

The disease, which has just been described, is one which has its seat in the crown and neck of a tooth; its progress being almost invariably arrested when it reaches the fang. But there are other diseases which attack this part, and which, though they do not so commonly occur, are not less destructive in their effects than caries.

Cases of enlargement of the fangs, owing to an accumulation of osseous matter on various parts of them, are not uncommon, by which, not merely a single tooth is sacrificed, but one after another is lost, till, in some cases, the patient is deprived of the whole set, by this formidable and destructive disease. It commences with a dull pain in one side of the jaw, which at times appears to be fixed in some particular tooth. Soon after the teeth which have been most painful, are found to be loose, and the gums and alveolar processes are gradually destroyed or absorbed, leaving the fangs without covering or support; the teeth are thus rendered useless, and too troublesome to be borne, and must consequently be extracted.

A disease similar to one which affects the other bones, and which has been called dry gangrene, sometimes fixes on the teeth. It commences in the natural cavity of the tooth; the lining membrane and vessels connected with it are destroyed, and the crown of the tooth, before there is much pain, assumes a dark blue appearance. A degree of inflammation next commences in the articulating membrane which connects the fangs with their sockets; the gums acquire a dark red hue, are soft, and easily made to bleed. Matter is then formed about the roots of the tooth, and is discharged by small openings produced in the gums by the disease; and in this way the connexion of the tooth with the socket and gums is destroyed, and the loss of it becomes inevitable.

These diseases, with others of a similar nature, extend in some cases to the bones of the face, so that abscesses and caries of the jaw are often connected with them, particularly as consequences of neglect, or improper treatment.

The causes of these diseases, though for the most part obscure, are sometimes to be traced to a connexion with some constitutional affection, or to blows, falls, and various accidents.

In the early stage of these diseases, or when they are first discovered by the patient, extraordinary care should be taken to brush and cleanse the teeth and gums, which should be done two or three times daily. Benefit will also be found from the use of an astringent lotion, of tincture of Peruvian bark and rose water, in equal quantities, or a decoction of marsh rosemary, in the proportion of one ounce of the dried root to a pint of water. When these diseases have so far advanced, as to become serious and painful, the patient must not expect to combat them with advantage, unaided by the advice and particular direction of an experienced surgeon, or dentist. And it is of importance that those who may suffer from complaints of the above description, should be cautioned against confiding in the advice of ignorant persons—mere tooth-drawers, and quacks. The former will generally affirm that nothing is to be done but to extract the teeth, while the latter will be ever ready to apply their *infallible nostrums*, accompanied with a profusion of promises to *cure all complaints*, even those which they are sometimes pleased to call *cancers of the mouth*.

## TOOTH-ACHE.

Writers on the subject, have generally mentioned this complaint as a particular disease ; whereas, a moment's reflection will show us that it is only a common symptom of disease. Pain in the teeth, or tooth-ache, is an almost invariable attendant on all the diseases which have been mentioned, and the mode of removing it varies with that of treating the different diseases of which it is a symptom. If it be induced by the exposure of the more sensible part of a tooth, as in case of caries, filling the cavity with gold, or the other methods of defending the nerves from the air, or destroying them, as mentioned above, will be sufficient to remove it. If it arise from inflammation about the root of the tooth, the same means should be used to subdue it, as in other local inflammations ; and hence, in such cases, we find that cold water, or vinegar, cold meal-poultices, or strong irritating tinctures to the face, and a full dose of Glauber or Rochelle salts, are the most effectual in removing the pain. The too common practice of holding hot stimulating substances in the mouth, serves but to prolong the suffering. A momentary relief only is obtained, while the tongue and cheeks

are smarting with each renewal of the medicine, but no permanent ease is experienced, till, by long suffering, fasting, and watching, the patient becomes exhausted, and the paroxysm terminates in sleep.

Very severe and almost unexampled suffering is sometimes caused by certain nervous pains to which the teeth are liable, not only when they are carious, or otherwise diseased, but even when sound. These, however, are generally sympathetick, and may be traced to some change in the habit or circumstances of the system, particularly those to which the female constitution is liable, or to some disordered nerve, or other local difficulty.

Tooth-ache from rheumatism, though rare, if the teeth are all sound, is very apt to occur when any of them are diseased; and the pain is not then confined to the diseased teeth only, but often extends to the sound ones, and even from the teeth of one side of the jaw to those of the other.

Tooth-ache is also a common attendant on a disordered state of the stomach and other digestive organs; and the suffering in these cases is generally even more severe than when produced by other causes, and is much less likely to be removed by any application made to the face or teeth only.



When tooth-ache is merely symptomatick of disease, or derangement in some other part or organ, it will most commonly yield to those remedies which are calculated to remove the original complaint. If, therefore, it be in consequence of nervous pains about the face, or ear, use some strong irritating tincture, as that of camphor, Cayenne pepper, or flies, or the volatile liniment, applied externally; giving at the same time a moderate dose of laudanum, and repeating it if required. If it be attendant on a sudden attack of rheumatism, it will often be wholly removed by a full dose of volatile tincture of guiacum, a warm bath, bleeding, or blistering. If derangement of the ordinary functions of the stomach and bowels induce it, an emetick, or a dose of some active cathartick medicine will in general procure relief.

These internal remedies, however, (as well as most others of a very active nature, which are applicable to the abovementioned cases,) should, as much as possible, be administered under the direction of a physician, in order to guard against error, in judging of the nature of the case, and in the choice of medicines most suitable.

TARTAR, OR SCURVY OF THE TEETH.

This is a troublesome, and often a very destructive complaint, and one which does much injury to the teeth, even before those who suffer from it are aware of any danger. It does not originate from any particular state of the teeth alone, or from a disordered state of the gums and alveolar processes, as many are led to suppose ; but is owing to an accumulation of earthy matter deposited from the saliva. With some individuals, it collects much faster than with others ; so that, whereas one will have his teeth completely encrusted with it in a few weeks, if the proper means be not daily used to prevent it, another will pass a long life without any care of his teeth, and tartar will not collect on them at all ; so much does its formation depend on the natural, or constitutional state of the fluids of the mouth.

The tartar is seen on some teeth of a black or greenish colour, and very hard ; on others, brown, or yellow, and not so firm in its consistency ; but in all cases it is productive of incalculable injury to the teeth, gums, and alveolar processes. When it is first deposited on the teeth, it is soft, and may be easily removed with a tooth-brush ; but if

suffered to remain, it soon acquires a stony hardness, and gradually increases in thickness about the necks of the teeth; the gums become irritated and inflamed by it, the sockets are next destroyed, and the teeth, being left without support, are often pushed out by the ordinary pressure of the tongue and lips.

Tartar will in some cases collect to so great a degree on the teeth of children as to produce a separation of portions of the jaw; and not only bring away the temporary teeth, but destroy those of the second set, which are beneath them. From this, and what has been before stated concerning the bad effects of tartar on the teeth, it will readily be perceived how important it is to arrest the progress of so mischievous a complaint, in its earliest stage.

With regard to the treatment of these cases, if the tartar has been suffered to become so hard as to require much force to remove it, the operation should be carefully performed, and without injuring the enamel, as is sometimes done, by the use of acids and files, practices which cannot be too severely censured. The teeth should be perfectly cleared of this foreign matter by sharp, cutting instruments, of a suitable form to effect the object without wounding and lacerating

the gums. For the purpose of preventing the tartar from collecting again, (or indeed from forming in the first place,) and for restoring the gums to a healthy state, nothing more is requisite, generally, than the daily use of a stiff brush, and some suitable dentifrice, or the astringent washes mentioned, p. 47.

Many persons are in the habit of suffering their teeth to go without any efforts of their own for keeping them in order, and apply at stated periods to a dentist, to have the tartar removed from them; and this they do, no doubt, from the persuasion that it is all that is requisite for preserving them. But it may be important to state, for the information of those who are thus deceived, that the repeated collections of tartar, and frequent operations, do an injury to the teeth which is not to be repaired by any subsequent care. The gums and alveolar processes are driven from them, they are deprived prematurely of that defence and support which these parts are designed to give, and are often lost many years before they would be, were a due degree of care bestowed on them.

## DISEASES OF THE ALVEOLAR PROCESSES AND GUMS.

THE alveolar processes commonly share in the diseases which affect the fangs of the teeth ; but cases in which they are primarily diseased are very rare. A complaint which is most frequently met with in them, is a gradual decay, or wasting of the bony substance, attended with a certain degree of inflammation of the contiguous parts. A little pain, or uneasiness and swelling of the gums, are first experienced ; the bone or process after this is very rapidly absorbed ; the affected teeth become loose, and appear to be thrust forwards and out of their sockets, so that they are much longer than the rest.

These cases, and particularly such as extend to the sockets of many or all of the teeth, appear often to be caused by, or dependent on, a rheumatick or gouty affection of the whole system. In the early stage of the disease the patient should take extraordinary care in brushing and cleaning the

teeth daily ; and he may also use with advantage, the astringent washes recommended in the preceding chapter ; by which, the progress of the disease will be much retarded, and the suffering greatly diminished.

A preternatural enlargement of the alveolar process, or bony tumours, are sometimes found to arise on the jaws. They may readily be distinguished from those of a different nature, by their being much harder, and immoveably fixed to the bone. They are not to be dissipated by any application made to the part, or by any internal remedy ; and all attempts to do it, are, at best, but useless, and for the most part hazardous. In these cases, as in all others, the interference of quacks cannot be too scrupulously avoided, and the advice of an experienced surgeon should be seasonably obtained. Tumours of this kind do indeed increase very slowly, and if seasonably removed, are seldom injurious in their consequences. The fatal effects which they have sometimes been known to produce, have been in consequence of deferring too long a safe and simple operation.

Caries of the alveolar process is a common occurrence, but it generally arises from some disease which has commenced in the teeth, and from various accidents to which

these processes are liable in common with other parts. The patient has little to do for himself in these cases, they for the most part require surgical aid, and to be treated according to general surgical principles.

#### INFLAMMATION AND SPONGINESS OF THE GUMS.

This is the most common disease to which the gums are liable, and which, indiscriminately with that state of the teeth which is produced by the accumulation of tartar, is often called *scurvy*. The effects of this disease are, a swelling of the gums, with a dark red, unhealthy appearance, great tenderness, and liability to bleed. In very bad cases the gums are surprisingly thickened, and rise nearly to the tops of the teeth. If the gums are suffered to remain long under the effects of this disease, the sockets of the teeth are destroyed by absorption and ulceration, and the teeth themselves drop out.

The ordinary causes of the disease are, collections of tartar on the teeth, long neglect of brushing the teeth and gums, even when there is no tartar formed, the use of mercury, and a scorbutick state of the whole system.

In order to prevent the ravages which this disease soon makes, if neglected, the gums should be brushed two or three times

a day with the astringent washes which have been mentioned above. Powders, containing Peruvian bark, are often recommended; in the worst cases, however, and particularly in those which have been caused by the use of mercury, which renders the gums very irritable, no powders should be used, but alternate mild and astringent lotions, such as warm water, or milk and water, followed by the application of a decoction of rosemary root, or hyson tea, the tincture of Peruvian bark, or a solution of alum, in the proportion of one drachm to a gill of water.

If the inflammation and swelling of the gums be produced by the accumulation of tartar, which is the most usual cause, this substance should be immediately removed.

#### GUM-BOILS.

Small abscesses of the gums often appear over the roots of the teeth, which are commonly called gum-boils. They do not, however, originate in the gum, but are produced by disease in parts beneath, most commonly by ulceration at the fang of a carious tooth. After matter is formed at this part, the inflammation is extended to the gum, and the process of ulceration is continued till the matter is discharged.



After gum-boils have been thus produced, they often re-appear from very trifling causes, till a permanent abscess is formed, from which matter is daily discharged. Although with some individuals these may remain for several months, or even years, without producing any serious consequences, particularly if the constitution be perfectly healthy; yet the injuries which sometimes result from them, show, in a manner too painful and troublesome to be forgotten, that they deserve early and particular attention. It is important in all cases to open these abscesses with a lancet, to allow the matter to be discharged as soon as it is evidently formed; and when a permanent cure is not to be obtained, except by extracting diseased teeth or stumps, this operation should be performed without delay.

The operations which are required in the treatment of these cases, if attended to in season, are most of them too slight to be feared, and all of them much less painful than the extraction of a bad tooth.

#### TUMOURS OF THE GUMS.

Preternatural enlargements of the gums are not uncommon. They proceed from various causes, but generally from diseased

teeth; and are seldom to be cured till these are extracted.

Tumours of the gums are either of a soft spongy texture, or of a more firm and fleshy nature, sometimes nearly of the consistence of cartilage. All of them expose the patient to other and more serious evils, by causing a disease of the jaw, more or less extensive. The hard, fleshy, or cartilaginous tumours, are not so common as those of the opposite nature; but their consequences are much more to be dreaded, if they are not early extirpated. They are sometimes found to be connected with a pre-existing disease of the jaws and teeth, and at others, arise without any discoverable cause. In all these cases the speedy removal of the tumour, (by the use of causticks, the ligature, or the knife,) is the only plan of treatment on which we can reasonably depend for success. In some instances, however, the laceration produced by extracting teeth which were enveloped in such tumours, has proved an effectual remedy.

## CLEANING THE TEETH.

**H**IGHLY important as this operation is to every individual, there are too many who neglect it; and, simple as is the process, there are many who from habit, prejudice, or want of correct information, fail of performing it in a proper manner.

As soon as the crowns of the first four permanent incisors, or front teeth, have fully advanced through the gums, children should be provided with a suitable tooth-brush, and be taught the use of it. There are but few persons, whose teeth do not require a considerable degree of care to keep them in a healthy and sound state, and more particularly to protect them from the rapid and injurious effects of caries, after they have become affected with this disease. For many, the daily use of the brush and cold water is all that is required to keep the teeth in perfect order; but most commonly, to effect this purpose, the use of dentifrice of some sort, is found to be indispensable.

With regard to the use of a brush, a moderately stiff one should be employed; for a brush may be too soft to be of any service, or so hard as to irritate firm and healthy gums. The teeth should be brushed morning and evening, but more particularly in the morning, as the causes which favour the accumulation of tartar operate most powerfully during the hours of sleep. Brushing them once a day, however, if it be done faithfully, is preferable to many hasty and imperfect attempts to clean them. Merely to pass the brush a few times hastily over the teeth, is of little service; five minutes or more should be diligently spent in performing this operation. It is also a very useful practice, to brush the teeth always after eating, particularly if they are very uneven, or affected with caries.

The idea that the enamel of the teeth can be injured by brushing, is as false and ridiculous as it would be to suppose that the palms of the hands may be worn out by moderate labour. The brush should not only be passed from side to side of the mouth, on the outer surfaces of the teeth, but on the inner parts of them, next the tongue and roof of the mouth; also upwards and downwards, from the gums of one jaw

to those of the other. When the teeth have been seasonably attended to in the manner above directed, the necessity for using dentifrice or tooth-powder, is very much diminished, if not wholly superseded; and there will be no case in which the use of it will be required oftener than once or twice a week. It should be remembered that it is not by merely spreading the powder over the surfaces of the teeth with the brush, and then rinsing it off, that it is to have its proper effect; but by faithfully rubbing it for several minutes on all parts of the teeth which are exposed to the action of the brush, taking care afterwards to remove every particle of it by the use of the brush and water, because, if left to lodge about the teeth and gums, it aids the formation of tartar. The water may be used cold or warm, as can best be borne, but cold is preferable.

Care should be taken in providing tooth-powder, that it do not contain any substance that will act either chemically or mechanically on the teeth, to injure them. Emery, pumice stone, and various acids are not unfrequently detected in those dentifrices and washes for the teeth and gums, which are advertised as *infallible in rendering the teeth*

*surprisingly white, dissolving and removing tartar, preventing decay, tooth-ache, &c. &c.* These may improve the appearance of the teeth for a day, but in many instances ruin them for ever.

Many persons, ignorant and unsuspecting of any evil consequences, are induced to use acids, sometimes concrete lemon juice, but more generally diluted vitriol, because they give the teeth at once a beautiful white appearance.

But few, however, have done this, without having to lament a most serious injury, or the total loss of their teeth; for in a short time, they become of a dead chalky white, soon turn dark coloured, and begin to decay and crumble to pieces, leaving the fangs in their sockets, more generally exposed to pain and inflammation, than if the crowns had been destroyed by any other cause. These baneful effects of acids cannot be too strongly impressed on the mind of every one; for they are so often used by the unwary, even at the present day, that scarcely a week passes, in which the writer has not an opportunity of witnessing some new case of the evils sustained by the pernicious practice of cleaning the teeth with an acid lotion or dentifrice.

In order to cleanse and preserve artificial teeth, the above directions should be carefully observed. It is necessary to add, however, that these teeth require more frequent attention than natural ones, and that *they should always be cleaned with a soft brush, and the mouth be rinsed thoroughly at least three times a day, particularly after eating.* If they are well made, and well set, they will bear this treatment; and will appear better and last longer in consequence of it.

## OPERATIONS ON THE TEETH.

**T**HE remarks which I shall offer under this head are not made with a view to describe particularly the various operations which are required in the treatment of diseases of the teeth, but rather to notice some circumstances connected with a few of the most common of them, which it is important should be more generally understood.

### EXTRACTION OF THE TEMPORARY TEETH, WHEN DISEASED.

The temporary, or first teeth, although they are often diseased, seldom require any operation, excepting that of extraction, or the removal of tartar. The importance of the latter will be seen by adverting to the observations on scurvy, p. 52. With regard to extracting the temporary teeth, it should be remembered, that a child ought not to be deprived of them without due consideration. If at the age of four or five years, the front, or even the canine teeth, become carious, as they often do, they may be extracted, espe-



cially should pain or inflammation render it necessary ; but if, at this early period, the double teeth are found to be decayed and painful, it will be advisable to defer extracting them as long as is consistent with safety, and at the same time to employ all suitable means to allay the pain, and prevent its recurrence, according to the directions given in the remarks on tooth-ache. But should there be inflammation and swelling of the jaw and face produced, the removal of the affected teeth should be no longer delayed ; as deep abscesses which break externally through the cheek, are not unfrequently the consequence ; and ulceration, when it takes place, and exists for any considerable time about these teeth, is known even to injure the permanent ones which are forming beneath them.

#### LANCING, OR CUTTING THE GUMS, AT THE TIME OF TEETHING.

The salutary effects of this operation have been already noticed in the remarks on diseases of dentition ; and they will be very generally perceived, when it is performed at a suitable time, and in a proper manner. It should never be done, excepting when there is evident swelling of the gums over the ex-

pected teeth, attended with undoubted signs of inflammation. These, however, should be ascertained by the surgeon, and not by the parents or nurses. Ineffectual and repeated operations will then be prevented; and it will only be requisite that the lancet should be used by some one familiar with the anatomy of the infant jaw, and with the relative situation of the two sets of teeth at this period.\*

\* As this treatise may occasionally fall into the hands of physicians, it may not, perhaps, be wholly unimportant, that I should address to them, a few observations with regard to the abovementioned operation.

Nothing, but an essential difference in performing the operation, could have given rise to the very opposite opinions, which have been, and still are, entertained by physicians with regard to its utility. For, while many are fully convinced of its beneficial effects, some consider it as altogether useless, and others condemn it as injurious.

When it is considered advisable to cut the gums, it should be done with a common broad-edged gum-lancet, and the incision made immediately over the teeth which are about to appear, but over no others. The gum should not merely be scarified, but cut entirely through, as also the investing or capsular membranes, till the lancet is felt to grate against the enamelled surface of the teeth. Should the edge of the lancet be placed a little too far towards the inner part of the jaw, particularly in cutting for the front and canine teeth, although we may divide the gum, and feel that the edge of the in-

## FILING OR SAWING THE TEETH.

This operation is often performed with a view to remove the black and defective parts of carious teeth, and to separate them in such a manner that the excavation formed by the disease may be more exposed to the action of the tooth brush ; but in a majority of cases these purposes cannot be effected either by saws or files, the operation will therefore be unavailing, and the hopes of the patient disappointed.

strument is resisted by bone, it will probably be no other than the internal plate or transverse portions of the alveolar processes, and the objects of the operation will not be obtained. Some relief may be produced for a little while by the bleeding, but more frequently, the irritation of the gums will be increased. Besides, by making the incision in this manner, there is danger of dividing or injuring the membranous and vascular connexion between the first and second sets of teeth, and thereby injuring or destroying the permanent ones entirely. Therefore, in order to prevent any injurious consequences, as well as to render the operation most serviceable, "the incision should be made towards the external plate of the alveolar processes, so as to avoid the connecting membranes and sacks of the permanent teeth, particularly those of the *incisores* and *cuspidati*. Those of the *bicuspides* are more easily avoided, on account of the flat and broad surfaces of the temporary grinders." [See Dr. Blake's Essay on the Teeth of Man and other Animals, pp. 175—177.]

The particular objections to the use of these instruments are,

1. That they do not remove the whole of the decayed parts of the teeth ; and it is a fact sufficiently evident to common observation, that the disease of caries is often communicated from one tooth to another by contact ; and it is equally true, that while any of the defective part of a tooth is suffered to remain, the liability of that tooth to decay is much greater than if this part were entirely removed.

2. That in all cases, the effect of sawing or filing is to deprive the teeth, unnecessarily, of a great portion of their sound enamel, particularly when these operations are performed on the front teeth.

3. That the crowns of the teeth being broader than their fangs, they often crowd together in such a manner, that, by the repeated operations of filing to keep them separated, one quarter and sometimes one third of each tooth is sacrificed, by the use of these improper instruments.

4. That separating *sound teeth* with the file or saw, (or indeed with any other instrument,) is a practice for which there can be no reasonable apology. The idea that they may be too close, and injure each other

by lateral pressure, is altogether erroneous; and there are no just grounds for the belief, that, by this operation, they may be prevented from decaying.

To these objections we may add, that filing the teeth always gives them a square and artificial appearance, and is one of the most disagreeable, and often painful, operations that is performed on them; to many persons, even worse than that of extraction.

As a substitute for files and saws, it is now recommended to use, in the operations for caries, small crooked knives, and other cutting instruments, which are liable to none of the above objections, and which enable the operator to effect the first, and also the most important objects in the treatment of this disease.

#### FILLING TEETH WITH GOLD, OR OTHER METALS.

This operation, which is sometimes called plugging the teeth, or from the frequent use of lead, plumbing them, is performed for the purpose of rendering teeth which have begun to decay more lasting and serviceable; and when it is seasonably and properly performed, it is effectual in preserving them for many years, very commonly from ten to twenty, and in some cases even forty years.

There are often cases in which the diseased tooth will not bear the pressure which is required to fill it properly with gold; and then lead, or, what is preferable, pure tin, may be used in its stead. These metals, however, are very soft, and liable to be worn away, or to be corroded by the acids which are taken with the common articles of food, particularly vinegar, and the acids of various kinds of fruit. And though tin or lead under favourable circumstances, may, and often does, continue serviceable for several years, it is very common to find both of them, even at the expiration of a few months, in the state of a black and dirty oxyd, or rust, and the diseased cavity of the tooth much enlarged. It is therefore best, in all cases where it is practicable, to use pure gold, which is too hard to be worn away by the ordinary process of mastication, and which will not be changed in its properties, or corroded, by any article of diet or medicine, excepting mercury, when its use is long continued.

SCALING THE TEETH; OR THE REMOVAL OF  
TARTAR.

Although every person may prevent the accumulation of tartar upon their teeth, by

the means pointed out in the preceding pages, and may even remove it after it has acquired a very considerable degree of firmness, yet it is very often allowed to collect for so great a length of time, and to become so hard, that an operation under the hands of the dentist is the only remedy. The doubts that are by some entertained concerning the necessity or usefulness of removing the tartar, originate in an imperfect knowledge of the nature of the case, and from accounts of injurious treatment by ignorant operators. The effects which have followed the use of acids and files, to dissolve and remove this substance, have not failed to destroy the confidence of those who have ever submitted to such impositions.

The operation, if skilfully performed, is simple, and seldom painful; and will always be of service while the teeth retain a sufficient degree of attachment to their sockets to make them worth preserving. It should be performed in the manner which has been directed at page 52; and the mode of treatment there prescribed for preventing the necessity of its repetition, will, if adopted, always be effectual.

### EXTRACTING TEETH.

There is probably no surgical operation which is not of a very serious or dangerous nature, that is so much dreaded as the extraction of teeth. Yet it is not always so much the fear of pain, provided the tooth be well extracted, as that of having it broken, the jaw fractured, or the instrument slip or break in the operation. These are accidents, however, which seldom happen in the practice of a skilful operator; but are generally attributable to ignorance or carelessness. There are, indeed, circumstances sometimes connected with every kind of surgical operation which increase the difficulty of performing it, and which are not in all cases to be foreseen, yet they are extremely rare; and when they do occur, if science and skill be engaged, unfavourable results are often prevented.

The accidents abovementioned, do indeed *too often* happen; and they must continue to occur, while the operation is entrusted to persons merely because they have strength enough to extract a tooth, and presumption enough to undertake it. Many are willing to believe a man sufficiently skilled in this operation, because he can make the instru-



ments with which it is performed; but who would employ a person to remove a wen, amputate a finger, or open a vein, because he could manufacture a knife or a lancet?

An idea is erroneously entertained, by many, that the instruments which are in common use for extracting teeth are imperfect; but this is not the case. On the contrary, the Key, the Forceps, the Hook, and the Graver, or what has been improperly called the *Punch*, though simple instruments, are all very perfect in their construction; and, in their present improved form, are calculated to separate a tooth from its socket with as much safety and despatch, and with as little pain, as are consistent with the nature of the operation.

Much time has been expended, and great ingenuity exerted, to produce an instrument for extracting the double teeth in a perpendicular direction; but every contrivance of this sort has been calculated to operate by making pressure on one or more of the teeth next that which is to be drawn. This circumstance has shown such instruments to be in a great degree useless, on account of the frequent unsoundness or looseness of the teeth on which the required pressure must be made, or the defective state of the tooth

to be extracted. Besides, these instruments are unavoidably large, and sometimes so complicated, that their application is inconvenient, and the operation necessarily slow and painful.

Instruments to operate in this manner have been tried and condemned by European surgeons, many years since; and they would not have been even mentioned in this publication, had not an instrument to operate on the same principle been favourably mentioned, not long since, by a learned and interesting American author; in consequence of which, some considerable degree of curiosity has been excited concerning it.\*

Besides the objections which have been mentioned above, it is proper to add, that the principles on which instruments of this sort operate, are bad. The teeth on which the instrument is made to rest, are liable to be injured by its pressure, even if they are sound, and of ordinary strength. Moreover, the power which must necessarily be applied to extract a tooth, is much greater than when the operation is performed according to the common approved method.

\* See Remarks on a Short Tour from Hartford to Quebeck, by Professor Silliman, p. 357.

And what is still more objectionable, the *direction* in which the tooth is extracted, is an improper one. It is not desirable to draw the double teeth perpendicularly from their sockets, not only because it will require a great deal more power to do it, but, as must be evident to every one who is acquainted with the anatomy of the parts concerned, the danger of doing violence to the jaw, and of producing inflammation, is much greater than when these teeth are drawn obliquely, as in the usual mode. Furthermore, the diverging position of the fangs will often render the perpendicular extraction of these teeth, wholly impracticable, or extremely hazardous.

## ARTIFICIAL TEETH.

**T**HE early loss of the natural teeth, which is often occasioned by disease, or by various accidents, and the pain and inconvenience which many individuals thereby experience, may be greatly diminished by the use of artificial teeth, provided they are well made and judiciously set.

There are, however, some erroneous prejudices against the use of these teeth, and many groundless fears respecting the operation of setting them; and also many incorrect notions with regard to the necessary and approved modes of performing this operation. The following observations are therefore made with a view to answer some of the most common inquiries relative to this subject.

Artificial teeth may generally be set, from one to any number required, where the crowns of the natural teeth have been destroyed by caries, or broken off by accident, leaving the fangs in a sound state; or, even where one or more of the fangs have also

been destroyed or extracted. They may be secured either to the fangs which are left in the jaw, or to the remaining natural teeth, or even be supported by other means, when there are neither teeth nor roots to which they can be attached; and they may be set, generally, without giving any pain.

When artificial teeth have the support which may be given them by good natural teeth or roots, they may be set so firmly as to be very useful, both in eating and speaking. They may be worn with ease and comfort, and may be kept so perfectly clean, with but a reasonable degree of care, that no unpleasant effects will be experienced from them.

Artificial teeth have been formed of various substances, but those which are most perfect are made of the teeth and tusks of the *hippopotamus*, or sea-horse, or from the teeth of some domestick animals. Teeth made of *ivory*, (the tusk of the elephant,) or *bone*, are very imperfect; they have no enamel, are soft, soon become discoloured, and begin to decay, and unavoidably render the breath offensive. The mineral, or China teeth, are also very imperfect; they have an opaque earthy appearance, are brittle,

and the sensation they produce when brought in contact with the natural teeth, in mastication, is very disagreeable.

There is no particular mode of attaching or fastening artificial teeth which is applicable to all cases. The mode to be adopted, must depend on the circumstances of the case, and must generally be left to the judgment of the operator. The idea which is still entertained by many, that artificial teeth must be inserted into the sockets from which the roots of the natural teeth have been extracted, or that the jaw must be perforated to receive them, is altogether erroneous. These are operations, which are so liable to produce extreme pain, inflammation, and other bad consequences, that they have been for many years abandoned by all dentists acquainted with the anatomy of the jaws and teeth, and with the principles and practice of surgery.

## ON THE PROFESSION OF A DENTIST.

THE following remarks are extracted from a small but well-written publication on the teeth, printed at New York within the current year.

“The care of the teeth and their diseases, like every other part of the human structure, requires a knowledge of their formation, their changes, and their relation to other parts ; in order to which, a proper acquaintance with the anatomy and physiology of the jaws and teeth should be first acquired, that the dentist may know where to press an operation, if necessary, and where, if danger be present, to avoid it.

“No man can do justice to the profession of dentist, unless he is acquainted with operations in surgery ; for the removal of tumours and excrescences, which arise from the state of the teeth, come within his province. He should also understand the causes which give rise to inflammation of the face, and neighbouring glands and muscles ; for very

serious consequences often result from it, particularly when the bones of the face become diseased from its influence.

“ ‘The teeth are objects worthy the attention of the anatomist, the physiologist, the chemist, the naturalist, and the practical surgeon ; for it is dreadful to reflect on the injuries to health, and the actual causes of mortality, which are daily levelled on the unwary, by buffoons and chatterers, by quacks and mountebanks, and by the most illiterate mechanicks, in meddling with disorders of the teeth.’ [See Hare, on the digestive organs, p. 294.]

“ Dr. Brown, of Edinburgh, in his remarks on the subdivision of surgery, makes the following observations.

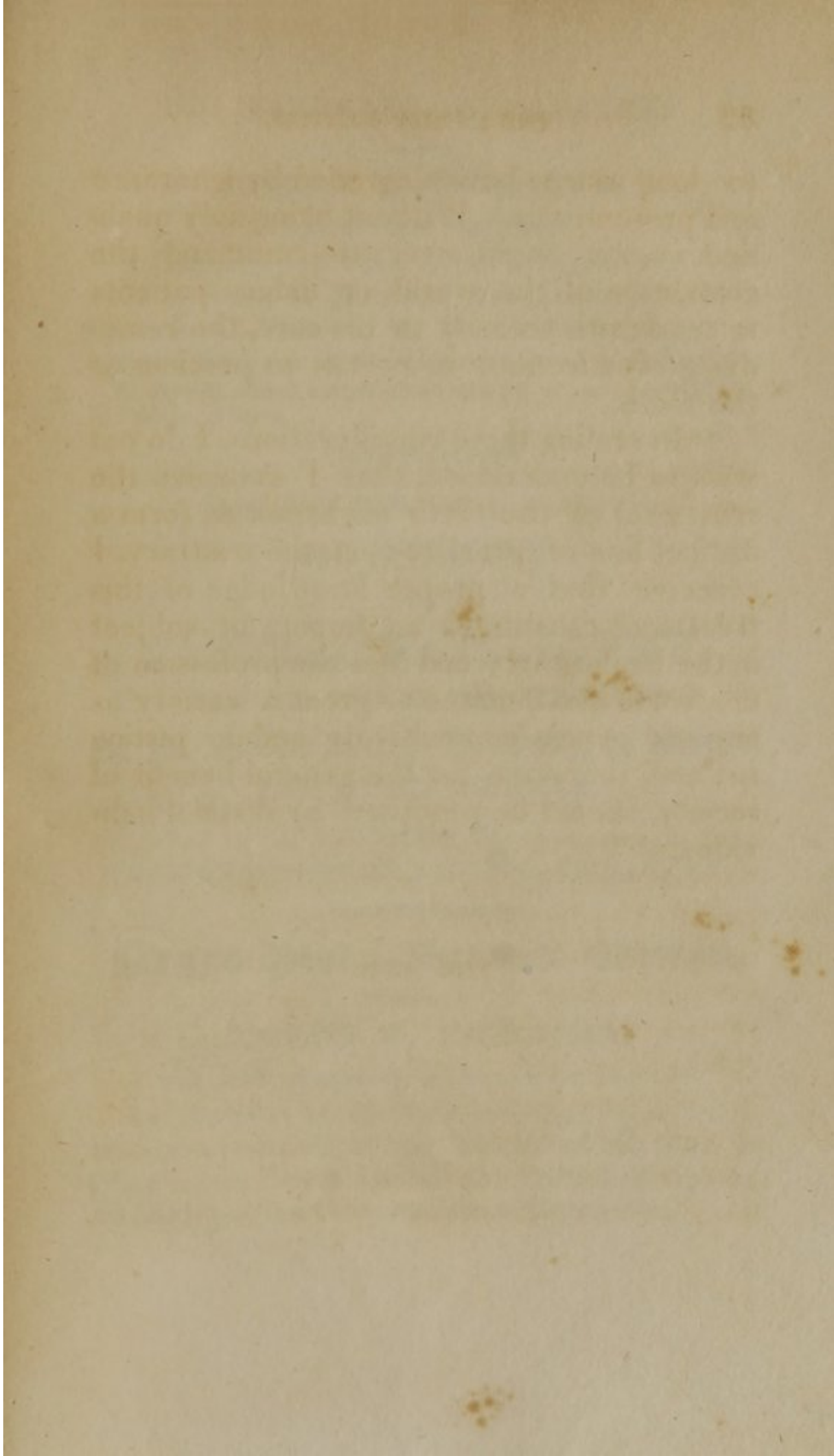
“ ‘If surgery has need of being subdivided, in order to its improvement and perfection, such subdivision is in a peculiar manner applicable to the branches which require great manual address ; and perhaps there is no one which demands more habit and dexterity than the dentist’s. If he who embraces it joins to the knowledge of the detail of his art, that which is required of medical men, he will not fail to hold a distinguished rank in science, and to contribute to the elevation of a branch of the healing art which has been

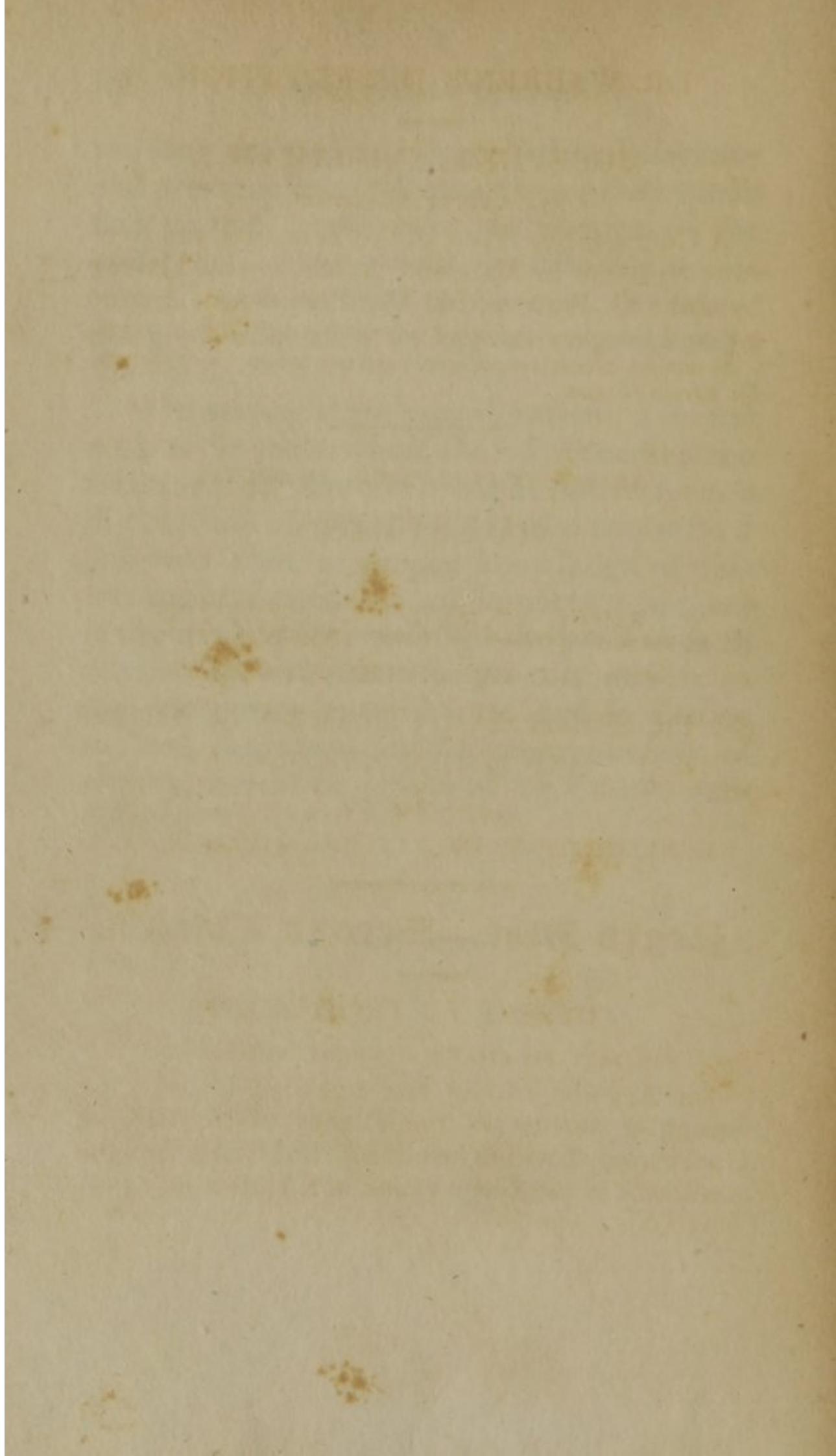


too long usurped and degraded by ignorance and presumption. Without being duly qualified, no one ought ever to command the confidence of the world, or induce patients to trust with security to his care, the remedying of affections in organs so precious as the teeth.

“In stating these considerations, I do not wish to be understood, that I conceive the treatment of the teeth ought not to form a distinct line of practice: on the contrary, I conceive that a proper knowledge of this treatment constitutes an important subject in the healing art; and that the profession of dentist, in itself, unites as great a variety as any one person can cultivate and do justice to; and, therefore, for the general benefit of society, should be practised by distinct individuals.’ ”

THE END.





DR. WARREN'S DISSERTATION.

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