A new system of treating the human teeth, explaining the causes which lead to their decay, and the most approved methods of preserving them : with copious and explanatory notes, to which is added some account of a discovery made by the author for the cure of tooth-ache, and tic douloureux. &c.; &c; / by J. Paterson Clark.

A

NEW SYSTEM OF TREATING

THE

HUMAN TEETH;

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WITH COPIOUS AND EXPLANATORY NOTES.

TO WHICH IS ADDED, SOME ACCOUNT OF

A DISCOVERY MADE BY THE AUTHOR

FOR THE CURE OF

TOOTH-ACHE AND TIC DOULOUREUX,

&c. &c.

BY

J. PATERSON CLARK, M. A. DENTIST.

AVEC DE MAUVAIS DENTS JAMAIS FEMME N'ETOIT BELLE.—
AVEC DE JOLIS DENTS JAMAIS FEMME N'ETOIT LAIDE.—

J. J. ROUSSEAU.

LONDON:

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1829.

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ADVERTISEMENT.

As many persons have lately begun to announce the discovery of Cements for the cure of tooth-ache, and as their various processes—whether good, bad, or indifferent—may be confounded with the one pursued by the author of the following Treatise; he conceives that he is but doing common justice, both to the public and himself, in taking this opportunity to state, that he first began to apply successfully an Anodyne Cement for the cure of tooth-ache, towards the close of the year 1825;—that shortly afterwards, while residing in King Street, and subsequently in Percy Street, he announced his discovery by repeated

advertisements;—that until the year 1828, no individual had ever applied the term "Cement" to any substance used for stopping teeth, as, did occasion call for such proof, he could satisfactorily attest;—that the Anodyne Cement is not, and never was, intended as a permanent stopping for teeth, but simply as a means for allaying pain, and destroying the sensibility of tender teeth, and thereby permitting them to be cleansed and stopped with gold, or other foil, in the usual way, without pain;—that Fusible Metal, and Mercurial Amalgams, from their nature, are incapable of resisting the admission of air and moisture, (the causes of decay in carious teeth,) and therefore have no power to allay suffering, or permit the carious portions of such teeth to be cut away, previous to their being permanently stopped,—and that no tooth was ever so preserved, nor ever will be.

With regard to the present publication, the author has merely to observe that it was suggested, partly by explanations he was professionally called upon daily to afford his patients, and partly by the vast and varied mass of notes, original and collated, which from time to time he had put together for the purpose of duly refreshing his memory on the subject of his particular profession. He has, however, scrupulously and severely condensed his materials, retaining only those annotations which bear immediately on the point he would wish to illustrate. Each separate note, therefore, serves to illustrate the author's views to a certain extent, while the aggregate gives a clear and intelligible idea of the progress of the Dentist's art up to the present period. It details also the growth and decline of the human teeth, from infancy to age; and as it is a

collection resulting from long, varied, and diligent research, it is hoped that it may prove acceptable to medical men; and that the volume, in which it is contained, may occupy, in the libraries of private families, some portion of the shelf appropriated to books of reference.

A word with respect to the style of the present volume. It is neither intended to be rhetorical nor ornamental, but merely to convey the greatest quantum of information in the fewest possible words. The author trusts for success to the variety of his facts, and the practical character of his remarks; the embellishments of language he leaves to those who are more competent to use them.

5, Sackville Street, Piccadilly.

London, Jannary, 1829.

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A NEW SYSTEM

OF

THE HUMAN TEETH.

CHAPTER I.

INTRODUCTORY REMARKS.

While the laws of nature in every department of the material universe have been successfully investigated, it is surprising how little has yet been done in a branch of anatomy immediately connected with the comfort and convenience of every individual member of society. It is unnecessary to insist on the great importance of the human teeth:* the pains attendant on

* However useful the improvements of Medical Science have been to society, in the alleviation and cure of diseases incident to the mouth and teeth, the preventive means, which Mr. Fox termed the "delightful secret", will, if prosecuted and brought forward, supersede the necessity of every other: since the want of preventive means has been one great cause of human misery, and the only reason why

teething, and their decay, are equally proverbial.—The Author of the present Treatise trusts he will not fall under the imputation of illiberality, if, in admitting that gradual and near approaches towards a full exposition of their nature have been already made in the dissertations that have appeared from time to time on the teeth, he takes leave to assert, that uncertainty continues to hang over the subject, and that a comprehensive system, grounded on satisfactory and consistent principles, is still a considerable desideratum.*

Perhaps no prejudice retains so powerful a hold on the public mind as the prevalent impression, that the teeth are influenced by some mysterious agency, which baffles all attempts to allay, much more to obviate their diseases. Most persons have at one period or other of their lives, experienced such diseases, yet they

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mankind do not longer retain these important organs for masticating their food, and preserving a perfect voice, the functions of which apparatus, constitute in some degree, a main spring of life.

L. S. PARMLY.

* *The cause of caries* has not been satisfactorily explained, from the structure of the teeth not having been duly considered.—Jos. Fox.

have been accustomed to look on them as evils inseparable from humanity, and have patiently witnessed their approach, 'till goaded by intolerable pain, they have sought professional skill, not so much from a principle of hope, as desperation.

Every analogous instance, however, of the providence of the great Author of Nature, discountenances the supposition that he forms imperfectly so important a branch of the animal economy as the teeth;—notwithstanding this, professional men have so far fallen in with received opinion, as to consider original Mal-conformation or defect,* the great source of dental decay.

Led to conclude that the teeth are intended to last for life, subject only to the gradual decay incident to the other parts of the body,† that they

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* It appears by minute observation, that their premature loss or decay cannot arise from any defect of original organization, but it is to be ascribed solely to the action of impure matter, the result of uncleanliness, on a part incapable of freeing itself from extraneous accretions, as in the other parts of the living body; and to supply this want of natural power, the interference of art appears indispensable.

L. S. PARMLY.

† This decay of the teeth does not seem to be so entirely the effect

are regulated by simple laws, and originate in definite causes within the reach of a counteracting process, it has been the object of the Author of the following pages, by long and studious attention to the appearances of the teeth in the various stages of decay, to ascertain the source of their diseases; and on correct principles, to provide the proper remedies. He trusts he may indulge the idea that his observations will avail much in removing the discouraging notion, that dental disorders are hopeless and hereditary;* and also that the principles he advances, will go far to preserve instruments so essential to the comfort of mankind.

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of accident as might be imagined; for it sometimes takes place in them by pairs, in which case we may suppose it owing to an original cause coming into action at its stated time, the corresponding teeth being in pairs, with respect to the disease, as well as to situation, shape, &c.

JOHN HUNTER.

* In the teeth of all animals in a state of nature, we discover no diseased structure or deformity, and therefore we must ascribe it in the human subject to *fortuitous*, not *constitutional*, or hereditary causes; for that they are less destructible than any other part of the frame is evident, since, in places where bodies have lain for centuries, teeth are found entire and sound, while the other bones crumble to dust.

PARMLY.

CHAPTER II.

GROUND-WORK OF THE SYSTEM.

SECTION I.

The ground-work of the system here offered to the public, is, that Caries, or rottenness of the teeth, in every instance, commences externally, and that external remedies will arrest, if not prevent it altogether; also, that though disease originate in this manner, it does not do so indiscriminately over the whole surface of a tooth, nor at the apparently corresponding parts of an individual set, but at points common to the same class of teeth in all mankind, where the morbid action necessarily commences. In an individual set, disease generally attacks them in pairs, from the same causes, viz: their natural form, and the circumstances in which they are placed at every stage of

their existence, being similar. The pairs here meant, are the corresponding tooth on each side the jaw. Perhaps it might be proper to say that they decay in double pairs, the same rule being equally applicable to the corresponding teeth of the upper and lower jaw.

Disease will in many instances originate, notwithstanding the utmost attention to cleanliness, which, however, will always protract the period of decay.

In general, it may be presumed that the saliva is not calculated to injure such portions of the enamel as are exposed to its unremitting supplies, and we consequently never find the more prominent parts of teeth the first to become carious. Even the bony substance,* when left unprotected, by the enamel being

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* If a sound tooth be broken by accident, so as to expose the cavity, no such quick decay ensues (as of a deseased tooth): however, we sometimes find in those cases, that exposure of the cavity will produce a decay, and even pain, similar to an original disease.

HUNTER.

Every tooth may be divided into two parts; its body, or that part which appears above the gums, and its fangs or root, which is fixed in the socket. The boundary between these two, close to the edge of the gum, where there is usually a small circular depression, is called the neck of the tooth. Every tooth is composed of its *cortex* or enamel, and its internal bony substance. The enamel, or as it is

either filed, broken off, or worn down, when its surface admitted of its being kept clean, is known to continue sound for years, though of course less calculated than the latter to resist decomposition. Sooner or later, however, such tooth will absorb sufficient moisture from without, to change and darken its colour, which, from the transparency of the enamel, itself unchanged, gradually becomes perceptible.

When indentation, or such like inequality occurs on the surface of the teeth, the juices of the mouth there become stagnant; their properties change, and they exert a pernicious influence, aided by the putrifying particles of animal and vegetable substances which likewise necessarily lodge there.* Should this stagnant

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sometimes called the vitreous part of the tooth, is a very hard and compact substance, of a white colour, and peculiar to the teeth. It is found only upon the body of the tooth, covering the outside of the bony or internal substance. When broken, it appears fibrous or striated, and all the striæ are directed from the circumference, to the centre of the tooth. This enamel is thickest on the grinding surface, and on the cutting edges or points of the teeth, becoming gradually thinner as it approaches the neck, where it terminates insensibly.

HOOPER'S MEDICAL DICTIONARY.

* *Foetid breath* is occasioned entirely by the state of the mouth, and has no connection with that of the stomach, as erroneously supposed. By a Chymical Agency on those relics of the food, which acci-

compound be left undisturbed, it acquires greater virulence, as the breath of many persons will abundantly testify. If however, it be daily subjected to the tooth brush, previously dipped in an antiputrescent wash, its noxious influence will be comparatively feeble.

The peculiarities which chiefly engender caries have reference to the natural form of the teeth, and the proportion they bear to the jaws in which they are.*

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dentally lodge between them, a deleterious change takes place, constituting an active poison, which corrodes their structure—L. S. Parmly.

* The teeth of men are distinguished by being all of one length, and by the circumstance of their being arranged in an uniform unbroken series. The cuspidati are a little longer than the others at first; but their sharp points are soon worn down to a level with the rest. In all animals the teeth of different classes differ in size and length, often very considerably; and they are separated by more or less wide intervals: this is particularly the case with the teeth called canine, or cuspidati, which are long, prominent, and distinct from the neighbouring teeth; their not projecting beyond the rest, nor being seperated from them by any interval, is therefore, a very characteristic circumstance in the human structure. Even in the Simiæ, whose masticatory apparatus most nearly resembles that of man, the cuspidati are longer, often very considerably longer than the other teeth, and there are intervals in the series of each jaw to receive the cuspidati of the other.

The inferior incisors are perpendicular: the teeth, indeed, and the front of the jaw are placed in the same vertical line. In animals, these teeth slant backwards, and the jaw slopes backwards directly from the alveoli; so that the full prominent chin, so remarkable a

These peculiarities may be divided into three classes, viz: the natural form of the human

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feature in the face of our species, is found in no animal, not even in the Orang-otang: it appears as if the part were cut off.

The obtuse tubercles of the grinders are again very peculiar and characteristic; they are worthy of particular remark, because, being the great instruments of dividing the food, they correspond to the kind of nourishment which the animal naturally takes. Their surfuce does not resemble the flat crowns with rising ridges of intermixed enamel, belonging to our common herbivorous animals; nor are they like the cutting and tearing grinders of the carnivora, but they are well adapted to that mixed diet prepared by the arts of cookery, which man has always resorted to when he could get it, and when his natural inclinations have not been thwarted by the interference of religious scruples or prohibitions, nor opposed by his own whims and fancies.

The lower jaw of man is distinguished by the prominence of the chin a necessary consequence of the inferior incisors being perpendicular: by its shortness, and by the oblong convexity and obliquity of the condyles.

On this subject of diet a question naturally presents itself; whether man approaches most nearly to the carnivorous or herbivorous tribes in his structure? What kind of food should we assign to him, if we judged from his organization merely, and the analogy it presents to that of other mammalia? Physiologists have usually represented that our species hold a middle rank in the masticatory and digestive apparatus, between the flesh eating and the herbivorous animals;—a statement which seems rather to have been deduced from what we have learned by experience on this subject, than to result fairly from an actual comparison of men and aminals.

The molar teeth, being the instruments employed in dividing and preparing the food, must exhibit in figure and construction, a relation to the nature of the aliment. They rise in the true carnivora, into sharp pointed prominences; and those of the lower, shut within those of the upper jaw;—when the series is viewed together, the general outline may be compared to the teeth of a saw. These

teeth, lateral pressure against each other, and accidental causes of decay.

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animals are also furnished with long pointed, and strong cuspidati or canine teeth, which are employed as weapons of offence and defence, and are very serviceable in seizing and lacerating their prey; they constitute in some animals, as the lion, tiger, &c. very formidable weapons. The herbivorous animals are not armed with these terrible canine teeth; their molares have broad flat surfaces, opposed in a vertical line to each other in the two jaws. Plates of enamel are intermixed with the bone of the tooth in the latter, and as its superior hardness makes it wear less rapidly than the other textures of the teeth, it appears on the grinding surface in rising ridges, which must greatly increase the triturating effect. In carnivorous animals the enamel is confined altogether to the surface of the teeth.

The articulation of the lower jaw differs in the two cases as much as the structure of the teeth. In the carnivora it can only move backwards and forwards, all lateral motion being prevented by the rising edges of the glenoid cavities: in the herbivora it has, moreover, motion from side to side. Thus we observe in the flesh-eaters, teeth calculated only for tearing, subservient, in parts at least, to the procuring of food, as well as to purposes of defence; and an articulation of the lower jaw, that precludes all lateral motion. In those which live on vegetables, the form of the teeth and the nature of the joint, are calculated for the lateral or grinding motion. The former, having rudely torn and divided the food, swallow it in masses; while in the latter, it undergoes considerable comminution before it is swallowed. The teeth of man have not the slightest resemblance to those of the carnivorous animals, except that their enamel is confined to the external surface; he possesses, indeed, teeth called canine, but they do not exceed the level of the others, and are obviously unsuited to the purposes which the corresponding teeth execute in carnivorous animals. The obtuse tubercles of the human molares have not the most remote resemblance to the pointed projections of these teeth in carnivorous animals; they are as clearly distinguished from the flat crowns, with intermixed enamel, of the herbivorous molares. In the freedom of lateral motion, however, the human inferior maxilla more nearly resembles that of the herbivora.

The first class, viz. Form, common to the teeth of All, although more strongly marked in some than in others, may be called the Primary cause of decay: the next, Lateral Pressure, (with some slight limitation, arising from the circumstance, that it is not necessarily an inherent principle in the teeth themselves,) may also be styled a Primary cause of decay:

The teeth and jaws of man are in all respects much more similar to those of monkeys, than of any other animals. A skull, apparantly of the orang-otang, in the Museum of the College, has the first set of teeth; the number is the same as in man, and the form so closely similar, that they might easily be mistaken for human. In most other Simiæ the canine teeth are much longer and stronger than in us; and so far these animals have a more carnivorous character. The points and ridges of the molares in Simiæ, are distinguished by their sharpness, from the peculiar obtuse tubercles of the human molares.

We find, that whether we consider the teeth and jaws, or the immediate instruments of digestion, the human structure closely resembles that of the Simiæ; all of which, in their natural state, are completely herbivorous.

I do not infer from these circumstances that man is designed by nature to feed on vegetables, or that it would be more advantageous to him to adopt that diet. The hands and the arts of man procure for him the food which carnivorous animals earn by their teeth. The processes of cookery bring what he eats into a very different state from that in which it is employed, either by carnivorous or herbivorous animals. Hence the analogy in the modes of procuring and preparing food is too loose for us to place much confidence in the results of these comparative views. We must trust to experience alone for elucidating the great problem of diet: its decision has been long ago pronounced, and will hardly now be reversed. LAWRENCE'S LECTURES.

the third class may be aptly styled Secondary and Casual, as it has no determinate existence, and is besides modified by circumstances.

SECTION II.

Shape of the Teeth a Cause of Decay.

The grinders, double, or back teeth, have a number of prominent points on their crowns, or parts which protrude beyond the gums, corresponding in some measure with the number of their real or apparant roots. These teeth resemble two or more front teeth tied together,* with a coating of enamel spread almost equally over them. Where they unite, a furrow appears, in some persons very deep, in others moderately so, or scarcely perceptible. Indentations exist not only on the grinding surfaces or parts of the double teeth, where they meet in mastica-

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* The edge of each row is single at the fore part of the jaws, but as the teeth grow thicker backwards, it there splits into an internal and external edge. HUNTER.

tion, but also on all their sides, from the gums towards those surfaces. Incipient decay makes its appearance by gradually darkening specks and lines in these indentations; and wherever such symptoms present themselves, a natural hollow will be found to exist. That these indentations are common to the double teeth, is proved by the appearance of front teeth when they come, as they sometimes do, in the shape of monsters. Such as an eye-tooth for instance, perfectly united with a lateral incisor, in front of the mouth, having two distinctly marked crowns and roots, with their separate nerves, &c.* and yet having but one socket, and as perfectly united as the component parts of the double teeth. A further proof may be found in the acknowledged fact, that double teeth, the elevated points of whose cutting edges diverge, have their roots more nearly approaching to each other in the jaws, while those whose edges approach each other, narrowing from the gum towards their grinding surfaces, have more diverging roots, and are conse-

* The Author has such a tooth in his possession.

quently more difficult of extraction. It is deserving of remark, too, that in persons whose teeth are not liable to decay, from their natural form, the grinding surfaces of the back ones shall be found more even, unbroken, and consequently less capable of retaining moisture, &c. than the teeth of those who lose them early; although the apparent joining may be distinctly traced in every instance.*

The features of the teeth, like those of the face, run in families to remote generations. Where either parent has had bad ones, such of the children as have them similarly formed, are similarly affected with caries, tooth-ach, &c.; and if both parents have indifferent teeth, the children rarely escape, unless by the intervention of art. Hence it is that in many families some never experience tooth-ach, while others are its constant martyrs.

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* Where the teeth begin to ossify at one point only, as in single fanged teeth, that ossification gradually advances till the tooth is entirely completed; but if there are more than one point of ossification as in the grinders, according to the numbers of its points, each ossification encreases till their basis come in contact with one another, and there all unite into one; after which they advance in growth as one ossification. HUNTER.

When the enamel has been penetrated by the dark speck or line, and the disease, in consequence of the action of the external air and moisture of the mouth has communicated with the bony substance, it advances more rapidly, eating away the interior of the tooth, till the enamel, deprived of its usual support, gives way, and the cavity is exposed. This species of decay never appears in front, or in eye teeth, as they have only single pointed, wedge-like forms, where there are no indentations for retaining food or moisture.

That the external form of the grinders is a primary cause of decay is further proved by the undeniable fact, that the teeth of healthy, are as liable to disease as those of unhealthy, individuals; teeth which are of a hard flinty texture, as those that are soft, delicate, or of a bad colour.

The natural shape of the incisors or four front teeth in each jaw, and of the four eye teeth, which are of wedge-form, is, when in their most perfect state, favourable to their preservation, except from lateral pressure and foulness;

while the two small grinders, or bicuspides, in each side of the mouth, being formed each like two incisors or wedges joined together, are, from such shape, liable to decay in their grinding surfaces only* where the furrow which lies between their double points readily retains whatever proves injurious in the moisture of the mouth. The large or double grinders, from their shape of four or more small teeth united, and from their deep depresssions on all sides, but more especially on their broad uneven grinding surfaces, are extremely liable to decay.

A diligent and extensive examination of almost any person's teeth, will convince the

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* Though this disease attacks all the teeth without distinction, yet it may be considered as a general rule that the grinding teeth more frequently suffer from this malady than the incisors and cuspidati; and that the bicuspides or small grinders, incisors and cuspidati of the upper, are generally much more subject to caries than the same teeth in the under jaw. The large grinders are affected with this disease most commonly on the grinding surfaces, whereas the small grinders and front teeth generally suffer from it on those sides which are in contact with the adjoining teeth. LEONARD KOECKER.

It is often observed on the hollow parts of the grinding surface of the molares, and there looks like a crack filled with a very black substance. In the incisors, the disease usually begins pretty near the neck of the tooth. HUNTER

candid inquirer, that appearances are much in favour of what has just been stated; and that incipient decay may always be traced to those natural indentations inseparable from the molar or double teeth Were the disease internal, it would manifest itself equally in all the teeth, or at least in a sufficient number of instances to set the question at rest; but the Author never met with a case where, after due scrutiny, he could justifiably think that it had commenced internally. On the contrary, he has repeatedly, in cases different from those enumerated above, when the enamel exhibited opacity or any other unnatural appearance on filing or cutting, come to wholesome enamel or bone, according to the stage at which the caries had arrived. However minute be the lines or indentations on the surfaces of carious teeth, (and they are often so minute as not to admit the finest point,) they will be found in all such cases to have admitted moisture into the bony substance, as glass or china when cracked, will permit the escape of liquids, in some instances even before such crack or frac-

ture can be perceived. The inquirer, however, will be gratified to find that such natural indentations always point, in the hands of the skilful, to an easy and a perfect remedy; for if the incipient decay be cut out, and its place supplied with a plug sufficiently durable, and rendered perfectly air and water tight, such tooth will last during the remainder of life. Cleanliness, however, is of the very utmost importance; also that the teeth be duly inspected, and on the first symptoms of decay be attended to, as hinted at above.

There is one more trait connected with the decay of the teeth, from their superficial structure, extraordinary, but at the same time true. A dead tooth would in favourable circumstances last for an unlimited period; which if in use in the mouth, would become subject to the same laws as regulate the decay of living ones. In the case of a false tooth pivoted or grafted on the root of another, if the enamel of the false one be entire, no decay of its substance will take place in the mouth, except where it is joined to the old stump, for however fine

their junction, moisture gradually insinuates itself between, when the bony substance becomes dark and soft, until at length the gold pivot begins to feel loose, both in the dead tooth artificially fixed, and in the stump to which it is attached. Should any flaw, such as an old caries, or a cavity artificially formed, exist, the false tooth gradually passes through the usual stages of decay proceeding from superficial structure. The same thing happens to artificial teeth formed from those of the sea-horse, or any other animal substance.*

After the double teeth have partially, or altogether disappeared, an undue pressure of the front teeth of the one jaw against those of the other takes place in shutting the mouth: this pressure unceasingly, and in general laterally, applied, has the effect of wasting and loosening the front teeth, which consequently soon begin to drop out, quite sound, accom-

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* Artificial teeth composed of animal substance, or natural teeth which are artificially placed to supply accidental deficiencies, having no vital principle to resist the effects of the heat and moisture of the mouth, are affected with caries, similar in appearance to that which affects the living teeth. Jos. Murphy.

panied by considerable irritation of the gums after the absorption of the bony sockets, the only props of the teeth.

Hence it is that we see so many toothless persons, particularly of the humbler classes, in old age; whence it may fairly be inferred that the natural shape of the teeth, aided by the circumstances in which they are placed, being liable to be affected by every change, whether of derangement of the stomach or debility of the whole system, is a primary cause of their decay.

SECTION III.

Lateral Pressure, a Cause of Decay.

It may be remarked generally, that teeth when in close contact in a jaw, are much more liable to decay laterally, where they touch each other, than those that do not come in contact.*

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* The *incisors* are often destroyed by caries: it generally commences on the sides, and this happens most frequently where they are irregular, or pressed very closely together for want of room.

Jos. Murphy.

Perhaps it would be difficult to instance a case of lateral decay where the teeth do not touch. They often have not sufficient room in the jaw, which occasions them to press against each other. When the disproportion between a jaw and its teeth is so great that the latter can with difficulty arrange themselves in the natural dental circle, their consequent pressure against each other proves injurious, partly by cracking the unyielding flinty substance of the enamel, and partly by diminishing the internal free supply of nourishment to the tooth at that part, as in case of ligature, and perhaps principally by forming a rallying point for the lodgement of irremediable impurities, as in the instance of natural indentations. Whether all or any of the causes here assigned be the real source of caries, or not, certain it is that crowded teeth decay in this manner. This deduction is strengthened by the fact, that where the disproportion between the teeth and jaws is so very great as to force a sufficient number of the former completely out of their proper circle, producing the appearance of

supernumerary teeth, and preventing their pressing against each other, no such decay is ever found. In all cases of caries when disease has once commenced, however minute be its first appearance, it rapidly spreads.

In treating of caries from their natural form, it has been stated that the double teeth only suffer in the first instance, and that the peculiar shape and smooth surface of the front teeth render them less obnoxious to decay; all the teeth of a set are, although not equally, liable to decay, from lateral pressure. The unfortunate double teeth, during their growth, from their square compact shapes, are less capable of quitting the dental circle. Hence we find, that although they might naturally be supposed stronger than the front teeth, they are in reality more liable to this species of decay: the front ones, from their less square natural forms, and the yielding nature of their sockets, being freer from lateral pressure. The front teeth of the upper jaw* are more subject to caries

* The fore teeth in the lower jaw appear to be less subject to this disease than any of the others: the fore teeth in the upper jaw, and the grinders in both, are of course more frequently affected.

HUNTER.

from this pressure than those of the under, because they are slenderer, and present a larger and more delicate surface in front.

It may here be remarked, that lateral pressure, so sure a source of decay, is often induced by mismanagement; and perhaps it may be added, that this observation applies more to those classes of society for whom too much rather than too little has been attempted by the Dentist; as irregularities are, from premature extraction of the shedding teeth, more frequently met with in high than in low life. Sometimes, however, the jaws are too diminutive to contain their full complement of teeth, in which case a judicious thinning of their numbers would certainly prevent lateral pressure; although a more desirable method would be to enlarge the whole dental circle of the jaw, by the temporary use of an elastic metallic plate, formed to a model of the mouth, as is usually done to regulate the direction of young persons' front teeth, when they grow irregularly.

Disproportion between the teeth and jaws,

may be occasioned by a natural conformation of the parts, or it may be the unnoticed effect of accident. For we seldom find any such disproportion, and consequent irregularity, in the arrangement of the teeth of men, like those of animals, in a wild state. The size and form of the teeth, like those of the body, being hereditary, may be regulated by a different law from their jaws; for when first formed they are of the fullest dimensions they can ever attain, while the size and form of the jaws are controlled by the accidents of life, which not unfrequently interfere with the original design of nature ; as in the case of maimed, deformed, and ricketty children.

It cannot be too strongly urged, that where the teeth and jaws are in just proportion to each other, if a tooth be extracted before the jaw has attained its full growth, or, if a shedding one, before the new tooth is ready to supply its place, the adjoining ones will approach each other, filling up the space, until there is little or no room for a permanent tooth instead of the one extracted.

With reference to decay by pairs, we may here repeat that teeth generally grow in that manner, and are consequently subject to the same degree of lateral pressure, from their similarity of shape and situation. This is proved by watching and plugging a faulty tooth in one side of the mouth, leaving the corresponding one on the other side to its fate, which will inevitably be removed by gradual decay, or by the Dentist.

This species of caries in general makes its first appearance in the shape of a small darkening speck, at the point where two teeth are in contact; hence the prevalent observation, that the decay of one affects another. This speck* gradually enlarges, as the enamel becomes decomposed by the agency of the impure matter which constantly lodges there: it also makes its way to the bone, which soon becomes soft and spongy, and is consequently well

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* We can observe in those teeth, where the disease has not gone deep, that from the black speck externally there is a gradual decay or alteration leading to the cavity, and becoming fainter and fainter. HUNTER.

adapted for retaining the noxious principle of putrifying saliva.

Teeth thus situated begin, thermometer-like, to indicate the changes of the weather, and to be affected on the application of heat and cold.

The caries, meanwhile gains ground; and not unfrequently, before any external appearance would indicate decay, the whole bony substance has disappeared in filthy fluid.* In chewing a hard biscuit for instance, or cracking a nut, &c. the thin, and apparently unbroken shell of enamel, often gives way and breaks down.

Decay from lateral pressure, like that from the shape of a tooth, is equally common to the strongest, as the weakest teeth; to those of persons who enjoy perfect health, as to those who are sickly, which it is presumed would not be the case were caries hereditary and internal. It cannot then be too generally known, that teeth which would be lost from lateral pressure,

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* It may be years before any serious injury is discovered, although pain may be frequently felt. I. L. Levison.

saving where difficulties insuperable from situation or form present themselves, may be preserved in the manner described under the head of stopping teeth.

SECTION IV.

Secondary or Accidental Causes of Decay.

HAVING already examined the two primary causes of decay in teeth, the first proceeding from the shape of the grinders, and the second from lateral pressure of all the teeth of a set, against each other; it remains to attempt a description of the third or remaining class of diseases. Caries in all its other varied forms proceeds almost entirely from want of cleanliness, the prevention and rectifying of which is nearly altogether within the control and management of man.*

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* Where the teeth are kept literally clean, no disease will ever be perceptible. Their structure will stand the changes of climate, the variations of diet, and even the diseases to which the other parts of the body may be subject from constitutional causes. L. S. PARMLY.

It may not be out of place here to remark that the bony substance of teeth, although next to their enamel, the hardest substance in the animal economy, is particularly liable to decay, when subjected to the vicissitudes of moist and dry, cold and heat, independently even of the chemical changes that necessarily take place in the mouth. The gastric juice exerts a pernicious influence on any dead body subjected to its attacks, and by separating its component parts, changes its very nature, and prepares it to return the more readily to its original elements.

The juices of the mouth, influenced perpetually by the state of the stomach, in like manner affect the teeth, which, in reference to external agency, may not inaptly be considered in the light of a dead substance. All acids occasion injury to the teeth, in so far as they dissolve and separate the component parts of their enamel.*

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* Denudation, (an unaccountable, but clean, wasting of teeth, on parts not subject to friction,) appears to be connected with some cause, which may produce a solution of the enamel, it is very possible

In eating fruit, a certain and well known sensation in the teeth calls attention to the chemical influence of even the small portion of acid it contains. In many instances, when we are unconscious of the cause, other and similar bad effects are produced. In chewing hard substances, as when a stone concealed in food is forcibly bit, a thrilling sensation is produced, which gradually wears off; but which, in some instances, leaves indelible injury behind; perhaps the enamel has been splintered, when the tooth will become the victim of the class of diseases first described; or a piece of the tooth may have separated, leaving the bony substance exposed; or the lining membrane of the socket may have been so much injured, as to become inflamed and

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that the saliva may have some influence, and that the friction of the lips may contribute to the removal of the enamel. Fox.

The cause of this disease, is simply a want of the proper management in cleaning the teeth, from an early period of life; and also the too frequent use of the daily advertised nostrums for the teeth and gums, which very generally contain some deleterious ingredient. They are used under various forms, such as tooth-pastes, electuaries, tooth powders, for bleaching the teeth white, &c. Sigmond.

disunited; when its substance, and that of the socket itself, are speedily reduced to their elements, and received by absorption into the general circulation of fluids in the body. The same thing frequently occurs to the front teeth, when struck a violent blow. They often remain for years in the head, but dead and discoloured.

Clammy and gummy substances, although innocent in themselves, frequently injure the teeth by their adhesiveness, and the readiness with which they seize on and retain acid. Dark specks, even in the more prominent parts, may be produced in this way; for if you wash a living tooth with strong acid, it will whiten at the time, but become discoloured for ever after.

The teeth are formed in pairs that correspond with one another, as the right hand with the left. If a line, indentation, or mark be found in one tooth, a similar peculiarity may reasonably be looked for in its fellow, in the other side of the same jaw.

The space between the teeth and gums, round their whole necks, retains food and mois-

ture; we accordingly find that decay frequently takes place from the decomposition of the enamel at the part where it gradually terminates in the neck of the tooth. Disease often originates between the teeth, from this cause, especially, when tartar has so much accumulated as to force the gums away from the teeth, or when perhaps the improper use of a tooth-pick has effected the same thing.

In many persons, the surfaces of the front teeth are marked by indentations, characteristic only of that person's, or his family's teeth; in which case they become liable to caries from their shape; but a gold plug, where other precautions fail, is ever an effective check to the further progress of decay. In the under front teeth, no such lines are ever found, and they accordingly never become carious from their natural form.

In the third class of diseases of the teeth, perhaps the most prominent cause of their loss is tartar.*

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* This is an earthly substance, held in solution by the saliva, and

This deposit appears to be of two kinds—the first and most pernicious, although less in quantity, is the greenish, thin substance, which attaches itself to the exterior surfaces of front teeth. It eats granularily into the enamel, and when permitted long to remain, arrives at the bony substance, which gradually becomes dark and soft, so that adhesion of the shattered enamel soon ceases, until at length the upper half of the body of the tooth is totally decayed, while the remaining half, towards the cutting edge, is perfectly sound.

To this species of attack the shedding teeth, from the neglect so natural to children, are peculiarly liable, as well as the permanent ones.* This tartar, increasing with time, insinuates itself between the gums and teeth, occasioning their complete separation, until it

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is deposited on the teeth, as the saliva undergoes decomposition. The formation of tartar is much influenced by the state of the health. Fox.

* There is another kind of tartar, which collects chiefly about the teeth of young persons; it corrodes the enamel, and disposes the teeth to be carious. Fox.

arrives at the sockets.* These last are peculiarly susceptible of change, with every affection of the teeth, on whose presence they altogether depend, appearing with their growth, and again disappearing by absorption so soon as the teeth have ceased to exist. This accounts for the great change effected on the face of a toothless person. The slightest continued pressure on any part of the sockets of teeth causes them to disappear in that direction, while at the same time they have a disposition to filling up behind, particularly in early life. To this peculiarity the front teeth frequently owe their preservation from lateral pressure, by sliding aside, when they cannot rise easily in the dental circle.

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* When it has increased so much as to touch the gum, it produces ulceration of that part, and a train of bad consequences. The gums, receding from this matter, become very tender, and subject to hemorrhage. J. HUNTER.

The use of mercury is no uncommon cause of premature loss of the teeth, by inducing absorption of the alveolar processes. G. FOX.

The disease which is erroneously termed Scurvy, is in fact a local disease, arising from uncleanliness of the teeth. This state of the gums is remedied by bleeding them, and by removing all extraneous matter from the teeth. JOS. MURPHY.

At this stage, and during its progress, acute pain is often experienced when the tooth is perfectly sound, and without a flaw, it is condemned to extraction. This disease is sometimes to be met with in the mouths of the most careful and cleanly persons. During the growth of such tartar, the gums become affected, continued excitement renders them inflamed, the blood vessels enlarge, and discharge themselves on every touch of a brush or any thing else. Tartar when it has greatly accumulated, or any undue lateral pressure of the front teeth, of the one jaw on the other, from the loss of the double ones, frequently induces suppuration in the membrane which lines the sockets, which will last for years until the parts are completely absorbed. All these evils may at first be easily prevented, and greatly mitigated at any period of their existence.

There is another species of tartar, softer in its nature, and deposited in much larger quantities. In some constitutions it accumulates as much in a week, as in others during one or more years; but the instances are rare where

it does not at all deposit itself on the teeth. In general it collects the most where the parts are beyond the range of the brushing influence of the tongue, and at the parts not acted on by the grinding of food. From the situation of the front under teeth, and the stooping-forward inclination of the head, tartar collects around their necks in greater quantity, and even when it grows no where else besides. That part naturally forms, as it were, the well of the mouth, where if any deposit exists, it must be found. During illness, when mastication is discontinued, tartar sometimes envelopes all the teeth, so as to exhibit the appearance of one unbroken substance of bone.

This tartar is soft at first, but continues to increase in quantity and hardness, not unlike the crust that forms in vessels where the London water is boiled. The quantity is sometimes so great as to impede speech, by forcing the tongue backwards in the mouth, as if a marble were fastened under it.

It is unnecessary to mention that this concretion, as far as it goes, always forces the gum

away from the teeth, and in consequence appears to lengthen them; while in reality they are deprived of their sockets, the gums of course retiring with the bone. Teeth thus situated, inevitably loosen, and keep the gums in a constant fever, in which the general system often participates. It becomes worst in persons of sedentary habits. All these evils, however, are by timely care and attention to be avoided.

In some constitutions the teeth are of a sickly yellow hue, which pervades their whole structure, and yet the strongest teeth are in appearance but rarely very white; in others they are of a transparent and pure white, the enamel being extremely thin. Such is the appearance which an acid would, for a short time, give to dark, healthy teeth, by removing a coat of it, and destroying them for ever,* while in a few,

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* Enamel is not reducible to quick lime by fire, till it has first been dissolved in acid.

When a tooth is put into a weak acid, the enamel, to appearance, is not hurt; but on touching it with the fingers it crumbles down into a thick pulp. HUNTER

the cementing principle of the enamel is so scanty, as readily to admit the disunion of its component parts.* These cases are on the whole of trifling importance, in so far as they occur only from accidental causes, affecting the general system, or only the teeth themselves, and that in a limited number of instances. At the same time it is deserving of notice, that if teeth, naturally delicate, or defective in substance, can be carefully nursed through the proper period of the growth and strengthening of the body, they may with continued care be rendered lasting and useful.†

Besides the external and visible diseases in

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* White teeth, if naturally white, are a sign of great health; that there is a whiteness of the teeth, a dry glossy whiteness, with pale gums, which is a sign of disease. Most of the English teeth are of a darker hue than those of the Africans, and this arises from our people's mode of living, indigestion and visceral diseases, being therefore more frequent than amongst the Africans. Now this darkness, or yellowness, arises from the quality of the saliva, and the quality of the saliva varies in proportion to the health or derangement of the digestive organs.

MEDICAL ADVISER.

† I have frequently seen these marks on both the first and second set of teeth, which causes me to suspect such children have had the small-pox twice.

DR. WOOFFENDALE.

teeth, and the parts adjacent, there are others connected with them which often create much suffering ; such as swellings of the sockets, and of the roots, when perhaps a diseased union between them ensues, with gum-boils, and more deeply seated abscesses, which have probably sometimes been the origin of the horrible malady—Tic Douloureaux.

CHAPTER III.

Preserving the Teeth.

If the decay and loss of teeth be owing chiefly to external agency, it is not unreasonable to infer, that they were intended to last whilst life should require their services. That this is a legitimate conclusion, may be drawn from the fact, that in numerous instances where in the same jaw teeth were extracted, or gradually decayed from caries, from twenty to fifty years before, the corresponding ones in the other side, which were nearly as bad, but more promptly attended to, and plugged, still remain sound and serviceable.

We now proceed to review the leading features and treatment of the teeth, from infancy to old age.

SECTION I.

*Shedding Teeth.**

The shedding teeth, of which the proper complement is twenty, usually begin to cease their functions about the age of seven years; when

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* Mankind is furnished with two sets of teeth: the first are called temporary, or milk teeth, their existence being limited to the age of infancy: they are twenty in number, and of three kinds, (classes), viz. Incisors, Cuspidati, and Molares. There are in each jaw four incisors, two cuspidati, and four molares. These are shed, and are succeeded by the second set, which are called adult or permanent teeth. When these are completed they are thirty-two in number, sixteen in each jaw, and are of four kinds, viz.: Incisors, Cuspidati, Bicuspides, and Molares. Those of the upper and under jaw, whose situations correspond, have the same denominations, and their crowns nearly resemble each other in figure. They are arranged as follows: in the front of the upper jaw, are four incisors or cutting teeth; next to these are the cuspidati, one on each side; next to the cuspidati are the bicuspides, two on each side; last in order are the molares, three on each side: the third molares are called dentes sapientiæ.

The arrangement of the teeth in the lower jaw is precisely the same as described in the upper, and they bear the same names; but there is some difference in their size and figure. All the incisors have single fangs—they are longer and pointed; the cuspidati have also single fangs—they are longer and thicker than the incisors. The bicuspides have mostly but one fang in the under jaw, and two in the upper. The molares of the upper jaw have generally three fangs, though sometimes four, and even five; those of the under jaw have two, and sometimes three fangs. The dentes sapientiæ have commonly two fangs, sometimes they have three, and often only one.

MURPHY.

they are succeeded by the second or permanent set, of which the number is thirty-two. In the first and second set, the four incisors in front of each jaw, and the eye-teeth are nearly alike, except in size; while the others are very dissimilar.

The first set, which are meant to last but for a short period, commence decaying at the roots. There decay is carried on by absorption, and so admirably is it contrived, that the general system appears unconscious of what is going on, until the shedding tooth, wasted to the surface of the gum and neck, usually drops out almost of itself, when the head of its more lasting successor appears instead.

A further proof of the intention of nature is here again exhibited: the shedding teeth, with roots as sound and equally well adapted for permanency as those of the adult ones, gradually waste away and drop without pain; at every stage of its decay, the remaining portion of root looks clean, and only gnawed away,* while the roots of the permanent teeth

* When the teeth are extracted during the process of absorption,

never decay, even after their whole body has been eaten away by caries. The shedding teeth, are, however, equally liable with the permanent ones to be affected by external caries, and for the same reasons, they should be objects of great care, as on their timely and proper shedding must depend much of the good or ill which will attend their successors; and although in some instances it may be improper to delay the extraction of a shedding tooth, more mischief has certainly arisen from premature extraction than from cautious delay.*

When the number of the first set exceeds twenty,† the last that appear are permanent double teeth; but as they show themselves long before shedding commences, their character is not unfrequently mistaken, and they are per-

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they appear as if the fangs were partly broken, or splintered off, but the fangs never exhibit the least appearance of cariosity, even when the crowns are carious.

JOS. MURPHY.

* The indiscriminate practice of drawing children's teeth before they loosen is erroneous; the intent of making greater room for the second set is thereby directly defeated.

DR. HUNTER, of Dublin.

† As exceptions only confirm a rule, it may be stated that instances occur of five shedding incisors in the same jaw.

mitted to decay. Permanent teeth, when extracted early, are without roots, for the root is the last part of a tooth that is formed;* and shedding teeth, previous to their dropping out, are without roots, for they have been absorbed. There is however, a wide difference in the appearance, as well of the body as of the roots of imperfect teeth of the first and second set, but it requires a somewhat practised eye to discern them. Permanent teeth have often been extracted for shedding ones, and before their roots were fully grown; they have been sometimes removed by the awkward extraction of an adjoining tooth, and as they were not possessed of roots, the parties congratulated themselves that it was only anticipating a law of nature.

It sometimes happens that one of them becomes so carious and painful as to render its removal necessary, in which case, if the cor-

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* The body of the tooth is formed first; afterwards the enamel and fangs are added to it.

JOHN HUNTER.

responding tooth be permitted to remain, a proportionate diminution of the jaw on the side from which the tooth was extracted will ensue, and a deformity to that extent be traced in the full grown face. If the extracted tooth be from the upper jaw, it may cause the teeth of that side to fall within those of the under jaw when the mouth is shut; and if the corresponding tooth in the other side be also removed, all the upper ones may shut inside the under, and produce a projecting chin.

That the first teeth are to be shed, is frequently made an argument for leaving them to their fate ;* in consequence of which, children, like their seniors, often suffer severely from the tooth-ach. Cleanliness alone, if attended to from the first, would preserve the

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* A gentleman has just paid me a visit, who has been my patient since the age of eight. During one of his vacations, I saw some incipient disease and stopped it: twenty years have elapsed, yet I found the same old stopping which I had inserted, in one of the large first double upper permanent teeth, and also in one of the large under double teeth. I have no hesitation in affirming this to be one of the most important and useful operations that can be performed.

SIGMOND.

body of a child's tooth, the decay of which neither hastens nor retards the coming of the second set; while in many instances, a little lead forced into it in the usual way, would preserve it from pain and tenderness to the last.

Instances sometimes occur where the first teeth are not all shed, and the second set do not make their appearance: this circumstance calls for delay in removing the first ones,* especially as from the accommodating nature of their sockets, almost any irregularity may, by simple mechanical contrivances, be corrected up to the age of from twelve to fifteen years. In general, however, the shedding teeth drop of their own accord at the proper time; or they are loosened and removed by the restlessness so natural to children.

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* The permanent single teeth appeared, in the first instance, irregular, and projecting more beyond the dental circle than the bicuspides, but within the period of twelve months, they fell into their proper place.

BLAKE.

SECTION II.

Cleaning the Teeth.

It has been shown that foulness of the teeth will breed diseases of the gums and sockets. Every means therefore ought to be adopted for keeping them clean. In order to do this effectually, it may be proper to bear in mind that the teeth are like beautiful pieces of ivory, with a very smooth glassy surface, so far as they are seen out of the gums; and that the same means would keep them clean as are daily resorted to for cleaning the ivory handle of a knife or fork.* The wet corner of a towel wrapped about the finger would clean them tolerably well; and if a little prepared chalk or charcoal were to be added, the ivory would look the more polished for the

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* If the constant use of a tooth brush and water be not sufficient to keep the teeth perfectly clean, a tooth powder may be used, composed of some substance not possessing any chemical property which can act upon the enamel, or of too hard a quality, by which it would grind it away.

Fox

operation. But as the teeth, from their situation are much in the same state as chased or carved work, inaccessible to the finger in some places, a brush will be found materially to assist the process.

When the deposit around the teeth acquires consistency, scaling instruments are requisite to scrape it off, and although many persons are prejudiced against them, yet they may without injury be used repeatedly in the course of a year, during a long life. Another advantage, besides the preservation of the gums and sockets accrues from this practice, namely, that the first commencement of disease in the teeth is detected and checked.

The prejudice advanced against scaling the teeth, owes its existence chiefly to the improper modes adopted by some operators, who not only break the enamel, but apply an acid under the disguise of a dentifrice, which dissolves it together with the tartar.*

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* All acids, gritty powders, and injudicious methods of scaling the teeth, are prejudicial; but simply scaling the teeth, that is, clearing

The surfaces of the teeth when perfectly clean, and free from foreign accretions, oppose no resistance to the easy play of a sharp instrument over every part of them; and the gums always adhere firmly to their necks; even the most unhealthy gums, if the teeth are sound, may, by severe brushing only, in a very few days be perfectly recovered.

This practice is superior to lancing, in so far as it is in the power of the patient to perform it almost continually. When the gums become too tender for the brush, the finger and thumb ought to be used repeatedly during the day, in order to press out blood or matter when either is in excess, until they attain a perfectly healthy state.

Of Lotions, it may be remarked generally, that they are intended to stimulate the parts to a new and more healthy action. The groundwork of them all is spirit of wine, modified by various admixtures: nothing how-

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them of the stony concretions which frequently collect about their necks, while nothing is scraped off but that adventitious substance, is proper and useful. HUNTER.

ever appears superior to the spirit itself, which may be sufficiently diluted by pouring a few drops on the tooth-brush when wet.

As to the degree of hardness requisite for a tooth-brush, it may be observed, that a hard one will soonest cure tender gums, but as the process may be painful, a soft one can be used until the gums gradually become prepared to endure the other. When the gums are sufficiently healthy they do not readily bleed, and for them, that sort of brush may be used which is most agreeable.

As the composition of tooth powders should be no secret to those who use them, they ought to know, that powders mixed with acids decompose the enamel, and subject the teeth to early decay; and that gritty powders waste them. A safe medium may be found in prepared chalk, or even cuttle-fish, as often as it may be required; but in general, a good brush well applied with clean water, will be found to answer almost every purpose. Charcoal, Bole,*

* Armenian Bole forms, like all argillaceous earths, a good tooth-powder, when mixed with some aromatic. DR. HOOPER.

and many other substances, may be used with safety for their antiseptic qualities; but those that are of a dark hue often enter into the vessels of the gums, and change their colour, without any adequate advantage.

SECTION III.

Of Plugging, variously called Stopping, Plomming, and Loading Teeth.

It has already been shown that the human teeth are subject to decay, from their Shape, Lateral Pressure, and Uncleanliness; and that their Preservation depends very much on the pains taken to keep them clean.* It now remains to be shown, how, where perfect cleanliness, from the situation and form of the teeth is unattainable, and how, where that process

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* The progress of disease is frequently stopped, and the tooth saved, by cleaning away as much as possible of the carious part, and stopping the hollow closely with prepared gold, which excludes the air, and prevents foulness, or the pain and irritation occasioned by food lodging in it.

MURPHY

alone would fail, other methods come in favourably to its assistance.

Of these, Plugging carious teeth, and thereby stopping* the further progress of decay, takes the foremost place. This operation is variously performed, and appears to have been amongst the first undertaken by those persons who assumed the name of dentist. The author himself had lately an opportunity, after curing its aching, of plugging a carious and tender tooth, for one of our most celebrated professors of music; a cavity in the other side of which tooth, had been successfully stopped thirty-six years before, by the father of the celebrated Talma.† He is also acquainted with the case

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* By stopping a tooth it is rendered artificially sound again. Fox.

The commencement and progress of decay is so insensible, that it may exist many years, and even the person himself is often not aware of it till it has penetrated the very centre of the tooth; having reached the cavity, it there commands attention, on account of the severe tooth-ach it occasions. J. Fuller.

† In 1783, applied to me, James Russel, Esq. On examining his mouth, I discovered a considerable decay in one of his large double under teeth, on the outside of the crown, or near the gums; and after relieving it by brushing with a lotion, and cleansing out the cavity, I stopped it with tinfoil. Mr. Russel lately informed me that the same stopping and tooth remain perfect and firm to this day, (1825.) Sigmond.

of a well known medical man in London, who has a serviceable tooth which had been plugged forty-seven years ago.

To understand what is meant by plugging, it is only necessary to refer to a gimlet or drill bore in a piece of ivory; or, perhaps, to the mouth of a phial, the contents of which, if you succeed in sealing it hermetically, can never be reached by the influence of external air or moisture. In this way the bony substance of teeth may be preserved to an indefinite period.*

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* Materials for Stopping Teeth.—Various materials and metals have been proposed for stopping of the teeth, all of which are more or less objectionable. Lead, tin, and silver, are frequently employed for this purpose, but they are all destitute of the properties indispensible to success, in the performance of the operation. Any of these metals will protect the cavity from caries, for a short period only. They will all soon corrode, and then become more injurious than the original disease; and in every case will ultimately prove the cause of destruction to the tooth, which might have been preserved by proper treatment. Although platina is a more suitable metal than any one of those above mentioned, yet, in consequence of the necessity of amalgamating some other metal with it, to render it malleable, it is by this adulteration rendered insufficient for the purpose. It is never accompanied by that cleanly and bright appearance, so desirable for teeth that have been stopped; but it is productive of a dingy opacity of the tooth's surface, which is apt to mislead the Dentist at a future period into an idea of its being again under the influence of caries, and is therefore also objectionable.

The substances most commonly used for stopping are gold, tin, and lead in leaf. The

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Even gold, the only proper substance for this operation, as it is often prepared for the dentists, though free from copper, is not unfrequently alloyed with silver, which renders it harder, and in some measure, liable to corrode, and is, therefore, in this state to be rejected.*

FUSIBLE METAL.

A composition used by some in this country, and generally in France, consisting of bismuth, 8 parts; lead, 5 parts; and tin, 3 parts, soluble at a heat of boiling water, and called fusible metal. In the first place, this metallic compound is as liable to corrode as either lead or tin, and possesses all the other noxious chemical qualities of both.

Secondly, the metal introduced into this cavity at the temperature of boiling water, will not only destroy the vitality of the living fibres, but also the whole surface of the healthy bone, and thereby produce some dead bony substance and caries, the very disease intended to be cured by it, which will inevitably destroy the teeth.

Thirdly, the irritation of the hot metal subjects the living membrane of the tooth to inflammation, and destroys the vitality of the tooth.

A fourth objection is, that the metal being poured into the cavity in its liquid and expanded state, will contract as it cools and consequently, instead of being a perfect filling up, it leaves interstices for the reception of foreign matter, which will destroy the tooth more quickly than if the cavity had not been stopped at all.

There are, however, other remedies also, of equal efficacy if judiciously applied. Such as filing and cutting, or a complete removal of the diseased parts of the bony structure by the file, or other suitable cutting instrument, so as to produce a regular and plain sound surface of the tooth by which health is preserved.

To remove every local existing cause of inflammation, especially

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* In India, teeth are often stopped with pure gold, which is not malleable, and consequently not fit for that or any other purpose. Virgin or pure gold is denominated 24 carats. Of these, divided into as many parts, One, at least, must be of silver, to render it malleable and fit for dentist leaf. The patient need not, however, be greatly alarmed on this account, when he recollects that guinea gold consists of two parts alloy, silver and copper, and that standard gold, for other purposes, has six parts of alloy.

manner of performing it is to introduce the foil gradually with a blunt-pointed instrument, called a stopper, into the carious cavity, having previously cleaned out the caries. When the cavity is full the foil is pressed into almost a solid state, by the repeated application of instruments, and is thus calculated perfectly to exclude atmospheric air and moisture. Lead and tin when put into situations beyond the

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every disease of the mouth that might be considered the principal exciting cause of the local maladies of the teeth, should be deemed as the next essential and indispensable duty devolving upon the dentist, before he could properly undertake the operation of plugging the affected tooth.

When the parts, in immediate connexion with the teeth, are in any way morbidly affected, they shonld be previously restored to their healthy action.

A tooth which has been deprived of its vitality by the destruction of its nerve, acts upon the parts with which it is in immediate contact, as a dead and foreign body, and causes an irritation with which the whole constitution sympathises. In the beginning the suppuration at the root of a tooth exists in the fasciculus of the nerve, and extends afterwards to the cord. The progress of the disease opens a way for the discharge of the matter through the canal of the root.

If, therefore, a tooth which has been treated after the above plan, be filled up with metal, the natural opening for the discharge of the matter is thereby obstructed, and the pus, being confined and accumulated, works its way through the side of the socket, and produces a fustulous opening, by which the morbid effects of such a tooth are rendered much more extensive and complicated than the dead tooth that has been left to itself. KOECKER.

reach of friction in mastication, as between two teeth, are apt to be decomposed by the fluids of the mouth, in the same way as the teeth themselves decay. But gold being indestructible, will remain useful and permanent, providing it is so applied as that no external moisture or air can penetrate the tooth. Platina is said to be equally effective; but it is better to adhere to gold only, the supplies of which can be more regularly depended on. Fusible metal is also used very much in France for stopping teeth, and a good deal in this country; but it requires little chemical knowledge to understand that this must ever be a very inefficient plug, insomuch as metals in a fusible state always expand, contracting as they cool, and thereby freely admitting external air and moisture: so far at least as regards the plugging of teeth, the truth of this will, sooner or later become manifest to the patient, however, he may at first have been duped by so specious an operation.

It is but justice to state, that our first London dentists, aware of the deceitful and injurious

consequences of fusible metals, never condescended to have recourse to them, when in many cases they could have applied them with every appearance of success.

Another substance for plugging teeth has lately crept into use, and is daily advertised as superior to gold or any other substance. It is, however, infinitely injurious, and consists of an amalgamation of mercury, with zinc, lead, and other metals. It is applied in a liquid state, and gradually acquires that species of consistence and appearance which characterizes the refuse of smelted ores.

Some individuals have used it for years, but unfortunately for the public and the reputation of the professors, it has been lately called a cement, in consequence, it is presumed, of the success which has attended the operations of the author, by the use of a *bona fide* cement for the cure of tooth-ache, and for cleansing the caries of tender teeth previous to their being permanently stopped with gold. So gross are the deceptions practised in this way, that he has a collection of such metals

removed from the teeth of persons who, so soon as they discovered their error, and from the pain they still continued to suffer, and the evident increase of the caries, were compelled to have the mercurial amalgam removed, and the teeth subjected to a course of the *Anodyne Cement*, previous to their being stopped with gold.

The first class of diseases in teeth, arising from their shape is the most easily remedied; for in the grinding surfaces and sides of the molar teeth it is only necessary to drill and clean out the affected line or spot, and plug it at once; but when the decay has proceeded from lateral pressure, the operation is more difficult. If the caries be between two teeth an opening must be effected between them, either by the removal of one, or by filing or otherwise cutting out a space to admit of using instruments, and otherwise adapting the cavity thus made for securely retaining the plug. The operator is sometimes interrupted in effecting an opening between two teeth, by the objections of the patient, who insists on the injurious tendency of filing. This is indeed to

die for the fear of death, as the uneven and broken surface of a carious tooth is thereby made even, and incapable of retaining the principles of decay, which alone is the means of saving many teeth; added to which, in bad cases, there is the smooth polished surface of the gold, or other plug in perfect contact with the enamel, at every part of the cavity.

When the lateral decay is between two front teeth in the upper jaw, their form generally makes it difficult to effect such a cavity as can be made to contain a perfect plug; especially as it is necessary first sufficiently to separate them. The general practice in this case is to file and cut the carious part entirely away, and that more from the inside than from the outside. It often happens, however, that the teeth are thereby ultimately lost, especially if the operation has been performed before the bony substance had acquired its natural hardness. Their preservation under such circumstances is rendered more certain by due attention to cleanliness, and by the daily application of pure spirits, which possess in a great

degree the power of preserving the bony substance by hardening it.

When the caries is between two teeth, or at their necks, it is often impossible for the patient to endure the cutting of it out, or even the touching of the parts with an instrument. In consequence of this many teeth are lost which might be saved, were any substance used which should have the effect of hardening the parts and deadening the sensibility. This is effected by the *Anodyne Cement used, by the author of this work, for the cure of tooth-ache.*

It has been already remarked that spirit of wine hardens the substance of teeth, and in time deadens the sensibility even of those that are tender from being filed. If a little quickly drying spirit varnish be used in addition, and permitted to remain, it will be found to accelerate so desirable an object. Let it, then, be impressed on the reader's mind, that if a carious tooth be thoroughly cleansed, and be then well plugged with gold, it will last during the remainder of life.

In the early stages of decay the remedies

are easy and obvious; but when the disease has been allowed to advance, the practitioner is, in a majority of cases, unable to proceed. The patient can neither endure the cutting of the bone, nor the pressure of the instruments used in stopping. In all such instances the use of the Anodyne Cement not only allays pain, but renders the bone callous, so as on one or more applications to make a case of advanced decay equally manageable with one taken before pain or tenderness had commenced.

CHAPTER IV.

Of Tooth-ache, its Cure.—Cases.

THERE is no complaint more general, or distressing in its nature than tooth-ache; nor one that has excited less attention. This indifference, is perhaps, owing to the facility with which the cause and effect are removed, by the extraction of the tooth,* and has doubtless been

* The extraction of teeth is an operation which cannot fail justly to create some alarm, when the circumstances attending it are considered. We know that in the hands of the most dexterous operators it has sometimes been attended with serious, nay, even fatal consequences; and therefore it should be avoided whenever in our power, instead of being adopted, as too often happens in the first instance. There is, perhaps, a greater share of manual dexterity necessary in performing it, than is generally imagined; to prevent fracturing that portion of the socket, where the fang is situated, and if the alveolar process is uncommonly firm, and does not yield to the force of the instrument directed against it, the fracture will extend a considerable

increased by the very prevalent, but unphilosophical notion, that the pain has no other remedy.

Were such pain the only mischief, some consolation might be found in the reflection, that with the absence of the tooth, it would cease; and that loss of teeth, when the number should be so great as to require such aid, could in a great measure be repaired by artificial means; but, constituted as we are, the sufferings that many endure, before extraction is had recourse to, from the want of rest and nourishment, often reduce them to the lowest state of debility, and in some extreme instances occasion consumption, and even death.

Many diseases which appear unaccountable*

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way into the jaw, and the effects of it may injure the patient for life. The operation is sometimes followed by a most dangerous hæmorrhage, which in many cases, has defied every effort of the most experienced surgeons.

L. S. Parmly.

* It is much to be regretted, that we have not attained any satisfactory practice in the treatment of toothache, and from the nature of circumstances, it is to be feared, never shall.

The influence of carious teeth is often very extensive; not only the face and parts adjacent, particularly the eyes and ears, but the whole head, neck, shoulders, and even the arms; the whole system becomes disordered by want of rest. Fuller.

to the medical practitioner, are found to proceed from bad teeth ; even when such are not particularly painful, and there are few persons who do not learn from their own, or their friends' experience, the torture that even the coming of a single tooth can inflict.*

It may here be stated, that when a tooth becomes carious from its shape, not only the corresponding one in the other side, but the whole class to which it belongs is liable to be similarly affected;—and that by plugs it is

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* It will be frequently necessary to lance the gums several times, on account of the extraordinary difficulty with which some cut the teeth.

DR. UNDERWOOD.

Teething is productive of local and constitutional complaints, with local sympathy. The local symptoms are inflammation, heat and swelling of the gums, and an increased flow of saliva. The constitutional, or general consequential symptoms, are fever, and universal convulsion, attended by *diarrhœa*, costiveness, loss of appetite, eruptions on the skin, especially on the face and scalp, cough, shortness of breath, with a kind of convulsed respiration, spasms of particular parts, an increased secretion of urine, and sometimes a diminution of that secretion, with a discharge of matter.

As far as my experience has taght me, to cut the gums down to the teeth appears to be the only method of cure. I have performed this operation above ten times upon the same teeth, where the disease had recurred so often, and every time with absolute removal of the symptoms.

JOHN HUNTER.

possible to save them all: moreover, that when a tooth becomes carious from lateral pressure, and is capable of being saved by filing, cleaning, and stopping, every tooth in the same jaw is necessarily liable to decay from the same cause, and may be preserved by separating the one from the other, and by plugging.

There is scarcely any stage, at which caries can arrive, that has not sometimes been successfully stopped with a plug, without pain at the time, or without being the cause of it at a future period; and there is no stage, the most minute, as well as the most extensive, at which a plug may not be the cause of pain in a carious tooth. It must be confessed, too, that there is no apparent stage of caries in a tooth at which, if it be stopped, pain may not return, and occasion either its extraction, or the removal of the plug. In a case of this description, if on the approach of tenderness, the plug be removed, and the cavity cleansed with spirit of wine, and be kept filled with cotton dipped in some one of the

usual remedies on these occasions,* such tenderness will cease, and the diseased tooth, after

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* Let all invalids repose no confidence in those infallible elixirs highly praised by quacks, and think themselves very happy, if, when using those remedies, they have not the misfortune to meet with some that produce ravages upon the gums and teeth.

J. C. JERBAUX.

ELIXIR FOR THE MOUTH.

Anti-septic Balsamic.—No. 1.

R. Alcohol of guaiacum, two ounces.
Alcohol of compound lavender, one ounce.
Tincture of alcoholized cinnamon, } of each two drachms.
Tincture of myrrh and of aloes, }
Essence of the London mint, } of each four drops.
Peruvian balsam, }
Mixed.

J. C. JERBAUX.

ELIXIR FOR CARIOUS TEETH.

Anti-spasmodic Odontalgic.—No. 2.

R. Alcoholized vulnerary water, two ounces.
Liquid laudanum, half an ounce.
Sulphureous ether, two drachms.
Essence of cloves. } of each ten drops.
Essence of London mint. }
Mixed.

J. C. JERBAUX.

TOOTH-POWDER.

Good tooth-powder may be composed of very fine bark, in powder, of the best quality, charcoal, cachos, alum, armenian bole, cinnamon, cochlearia, &c. either separately or compounded.

J. C. JERBAUX.

some time, may be successfully re-stopped. Cases may, however, occur where such teeth, when plugged, will never continue well.

The pain when it returns, and is occasioned by a plug, in some persons commences almost immediately; while in others it will take days, weeks, and even months. On the removal of the plug, if of any substance but gold, oxidization will be found to have commenced, from internal moisture and decomposition of the bony substance of the tooth in contact with it, accompanied by the fætor usually

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Qualities of Tooth-Powders.

Soot acts by mechanical friction, but not superior to any bitter powder, as bark, &c.—Charcoal acts mechanically by its friction;—Burnt crust the same.—Gunpowder produces no effect but through the charcoal and nitre it contains.—Alum is a most mischievous application to the teeth, being the produce of oil of vitriol and clay. It is a very strong styptic, but on coming in contact with the teeth it is immediately decomposed, the acid uniting with the teeth.—Salt, perfectly innocent, although not serviceable.—Nitre, or Saltpetre, a valuable application to inflamed gums, removing the rough, viscid slime, which, in some, collect over the teeth and mouth; it is a useful gargle, and does not act on the teeth.—Cream of Tartar: improper; acts on the enamel.

Mixtures of soot, salt, soap, &c. &c. remarkable only for their nauseous qualities.

J. Fuller.

proceeding from carious teeth; or a drop of matter or of blood will be found upon it. In some instances a fine jet of blood issues from the vessels in the interior of the tooth. Of such cases it may be remarked generally, that the caries has been of long standing, of which the large or small size of the decayed portion of bone is no sure indication; for the teeth of some persons will decay as much in one week as those of others in a year.

Tooth-ach, in most instances, proceeds from inflammation of the nerves* and blood vessels in the natural channel in a tooth; it also proceeds from the lining membrane common to its

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* The nerves are the conductors of all sensation. They have their origin in the medullary substance of the brain, of which, and the spinal marrow, they are formed. A nerve is composed of a number of minute fibrous threads, lying parallel to each other, and is covered by a continuation of the fine membrane which envelops the brain, and invests the inside of the skull.

The nerves are divided into two kinds, those that issue from the brain, and from the spinal marrow. One of the former enters the upper jaw near the dens sapientiæ, and distributes branches to the teeth. Another nerve divides into two branches, one of which enters the lower jaw bone and supplies the under teeth with nerves.

JOSEPH MURPHY.

roots and their sockets.* The inflammatory action, whether excited by cold, or by the contact and pressure of foreign substances, causes an enlargement of the vessels as in other parts of the body; in blood-shot eyes for instance; and which, from their situation as well as extreme sensibility, not finding room to expand, are pressed against the sides of the bony chamber in the tooth, which pressure, it is presumed, occasions the pain. When a tooth is much decayed, the nerve, &c. may be seen, like a maggot, to rise out of its natural channel, but after the inflammation has been reduced by any means, it disappears. The same effect is rapidly produced by the Anodyne Cement, which causes, in nearly all cases, an immediate cessa-

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* The periosteum will prove to be a means of only fixing the tooth in the socket, and of preserving the sensibility of the nerve in the cavity of the tooth. CHARLES BELL.

The fangs are covered by a thin periosteum or membrane, full of vessels, which also lines the cavity of the socket. MURPHY.

This plentiful supply of vessels must expose the teeth to the same disorders that attack other vascular parts; and such teeth as have the greatest number of vessels, must have the most numerous chances of being seized with these diseases. ALEX. MONRO.

tion of pain. If the inflammatory action has been long permitted to remain, the tooth is partially ejected from its socket; for it is not fixed there like a nail in a board, but like a ball moving in a socket, and is consequently felt to be longer than the other teeth. From this cause every time the teeth meet in shutting the mouth, the greatest pressure is applied to the painful tooth, and the inflammation is thereby increased. The simplest remedy for this is to keep the teeth apart, which may be easily done by placing a piece of card or other substance between two teeth in some other part of the mouth. To prevent swallowing it while asleep, a strong thread may bind it, whose other end is tied to a button-hole, &c. The pain is not always confined to the affected tooth, nor parts in immediate contact with it, but spreads to that whole side of the head and neck, and even the shoulders and arms, &c. Perhaps this applies more to nervous affections, when the nerves within the teeth are the exciting cause. All these gradually subside and disappear as such cause is removed.

Occasionally a new tooth will account for the pain just named, in which case a simple lancing of the gums will cure it.

In some persons teeth will totally decay without pain. This may proceed from caution on the part of the patient, or from the blood-vessels decaying more rapidly than the bony substance which protects them; or it may proceed at any period from ossification of the nerves, as in old age.

The Anodyne Cement will, ninety-nine times in a hundred afford relief from tooth-ache, by one or more applications, however carious the tooth. Even when it is so tender as not to admit of drying and cleaning out the carious cavity with cotton wool, the cement may be applied, like very soft putty, without occasioning the slightest pain. It soon becomes hard, and causes an immediate cessation of torture as well by its chemical properties as by the mechanical protection it affords in keeping off the exciting causes from the nerves. The tenderest tooth subjected to it, will in a few days become so insensible to pain on touch, that the

caries may be thoroughly cut out and the aperture stopped in the usual way, without more uneasiness than accompanies the operation in the first stage of decay.*

If the nerves, &c. in a tooth be so diseased as to emit blood or matter, the cement will sooth and quiet them, so as to admit of covering them by a plug ; but as the matter oozing from the vessels, again collects, and becomes stagnant under the plug, it places any such tooth in the same situation as a boil, the pain of which ceases so soon as its matter has been discharged.† If instead of being plugged with gold, the tooth were to be kept filled with bees' wax, or gum mastic, softened in warm water, both to exclude cold, and prevent unpleasant breath, the nerves would gradually die away,‡

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* By the beautiful and useful operation of stopping or plugging teeth which are greatly injured by caries, they may be preserved for many years; in most instances, during the remainder of life; and, not unfrequently, from ten to twenty teeth may be preserved by this operation in the same individual. KOECKER.

† After the lining membrance (nerve) of the teeth is exposed, it requires a space of time, from one to twelve months, before this membrane is destroyed by chronic inflammation, and suppuration. During this time the patient is always subject to the toothache. KOECKER.

‡ If repeated inflammations be submitted to, a cure will be performed in time, by the stump becoming totally dead. HUNTER.

and the remaining portion of the tooth, if always kept clean, or perhaps afterwards stopped, would continue serviceable, as well in eating as in preserving the natural form of the face.

In pivoting or grafting one tooth on the root of another, the nerves are frequently destroyed to a certain extent, by a drill. But the cavity is then, after a day or two, safely plugged by the gold pivot, and no injurious consequence ever ensues.

If in like manner the nerves of the double teeth could be destroyed to a certain extent, it is presumed, that a continual healing process would cover the remaining parts with a new skin, which would not discharge matter, and that the tooth being quieted and plugged, would remain well; but this, from the number of the roots, and the shape of their internal cavity, and the great pain which the operation would occasion, is a matter of so great difficulty, as to render it improper for general recommendation.

The same effect is with almost perfect certainty produced by the application of lunar

caustic. This remedy was early recommended by Mr. HUNTER, and followed by Mr. ABERNETHY as a sure cure for tooth-ache. It certainly relieves pain by burning off the inflamed and diseased surface, and perhaps by inducing a new and healthy action of the vessels; but it discolours and destroys the bony substance, and while any portion of the nerve remains, pain will ever be apt to return on the slightest excitation, unless the process be watched, and the tooth plugged.

In teeth where the volume of nerve, &c. is small in substance, as in incisors, eye-teeth, and bicuspides, the cure is almost easy and certain; but in the large double teeth, where the nervous substance in the crown is great, caustic, unless aided by the actual cautery, or a drill, becomes too troublesome to be generally recommended.

The practice of persons who on some occasions cure tooth-ach by destroying the nerve, is to use caustic in a solid or liquid state, or acids, and essential oils, by which the teeth are in general destroyed, but by so slow a process, as not particularly to attract the notice

of the patient until perhaps he is nearly toothless.

The Anodyne Cement destroys nothing; it merely deadens the sensibility, and enables the operator to remove with instruments whatever would be injurious if permitted to remain; and as the teeth generally begin to ache long before their natural cavity is laid open, many teeth may easily be saved, which else should be extracted, or from their tenderness would be unable to bear the clearing out of the caries and the plugging with gold.

The Anodyne Cement may be considered as a poultice, which requires to be changed as often as the state of the sore may render it necessary. And this circumstance may have led in some instances to the various opinions that prevail respecting it.

Incurable teeth, when they occur, are generally found to have their roots highly inflamed, with a fungous growth at their points. This is the first commencement of a gum-boil. The sockets participate in the inflamed action, and if thin and delicate, they are soon ab-

sorbed, when the matter formed discharges itself in the manner of a boil, and the tooth becomes easy.* But in some instances the absorbing process is so slow, that the most enduring patient becomes too irritable to endure it. At every stage of decay previous to this one, the inflammation may be reduced and suppuration prevented.

In attempting to be thus minute, the author's object is, if possible, to remove the mistakes that the novelty of his practice may have originated.

The following cases will further illustrate the nature and object of his practice:

The cases are selected from those of noblemen and gentlemen of distinction and their families, also from those of eminent medical men and dentists, their families, friends, and patients, who, on proper occasions, have been referred

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* Gum-boil arises from a diseased tooth. When the effects of the disease have extended to the vessels at the point of the fang, and to the periosteum and socket, the circulation being impeded in those parts induces inflammation, suppuration takes place.

MURPHY.

to. One dentist,* in particular, who was himself instantaneously cured of tooth-ache by the cement, and who after three weeks of severe suffering, before submitting to have the aching tooth extracted, would try the "new remedy," merits honourable mention: as from the cases daily submitted to him for extraction, he has never since been known to remove one tooth which, from its appearance, deserved to be preserved; and many persons could be named by this gentleman alone, whose cases would sufficiently establish the advantages of the Anodyne Cement, in every possible stage of caries and tender teeth.

Case.—A lady residing in Piccadilly, had the second small and first large grinders attempted to be plugged with gold by one of the most fashionable dentists of our day; but while they were being cleaned out for the purpose, the nerves were touched, and violent pain

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* Mr. Imrie.——Several members of the profession, since the above was written, have begun to follow a plan so creditable to themselves, and honourable towards their patients; and the author here takes an apportunity of thanking those of his brethren who have thus acted, and with whom he is not personally acquainted.

ensued, which lasted almost without intermission for three weeks, when the Anodyne Cement was applied and afforded instant relief. About a fortnight after, gold plugs were, without pain, introduced in the usual way. The lady's teeth have experienced no return of aching after a lapse of twelve months. It is but justice to the very celebrated dentist here referred to, and who cannot be excelled in plugging or extracting a tooth, to say, that his way appears to be, to go fairly and honestly to the work whatever may be the consequence. That is, if the tooth cannot be thoroughly cleansed previous to the introduction of a gold plug, he will not attempt it, even at the risk of exciting tooth-ach or occasioning the extraction of the tooth. Because if carious bone be permitted to remain, moisture, the principal source of decay, will still find its way into the cavity through the porous decomposed bone that remains, and thus lead ultimately to the loss of such tooth. In similar circumstances the practice of empirics is to fill carious teeth with a fusible metal, which is literally cover-

ing a fire with deceitful ashes, for the filth in the carious tooth has not been removed, and the cinerous nature of the metal permits the ingress of moisture to the cavity; the disease consequently spreads until at last the shell of the tooth breaks down in mastication, while to the last, unless the tooth should prove painful, it is thought to be permanently plugged.

A lady suffered, previously to her confinement about twelve months since, very considerable annoyance from an upper small grinder, which was treated in the same way, and with equal success. The Cement was applied twice before the lady's confinement, and after her recovery it was stopped with gold in the usual way, nor has it ached since, but continues as useful as any other in the head.

Another lady, residing a short distance from town, had a tooth temporarily stopped by the same dentist, with a little tin-foil, as it could not then stand the pressure of gold—For a whole fortnight she endured great pain, in the vain hope that with time it would wear off. At length the lady resolved to have out the

tooth, and came to town for that purpose; but would first try the Cement, of which (though incredulous as to its efficacy,) she had heard much. The Cement was accordingly applied, ineffectually at first, from the high state of inflammation excited by the former plug. The operation was repeated in half an hour, and still the pain continued. Impatient and distrustful, the lady quitted the house to execute her first resolution of having the tooth extracted; but on her road having experienced almost immediate relief, she waited a fortnight, and on her return had her tooth stopped in the usual way.

A servant of the same lady had suffered from a similar complaint at intervals for several years, and had lost most of her teeth: to the few that remained the Cement was applied; they became well, and have since continued so, although not permanently stopped. The same patient had two front teeth in the under jaw quite loose from the growth of tartar about their necks, which had induced absorption of a great part of their sockets. The

tartar was removed, the gums severely and daily brushed together with the teeth, which are now quite fast. Many friends of the same family, and a sister of the lady, have had the cement since applied to their teeth with equal success.

An upper lateral incisor of a Nobleman was rapidly decaying, after filing had for some time retarded such decay. The cavity of the nerve was exposed, and the tooth so sensitive, as not to admit of being dried even with lint. Although not sufficiently tender to induce its removal, it had been, nevertheless, given up as hopeless by an eminent Dentist two years before. It was, however, cured by the Anodyne Cement, and stopped with gold. After some time, pain, as was feared, began to return. The gold was accordingly removed, and the healing process again for a while pursued. It was found necessary even to apply leeches, to such a length did the fresh attack proceed. After a time the tooth was again stopped, and now (it is a year and a half ince,) remain s w ell.

A large double tooth in the upper jaw of Mr. ———, M. P. was stopped with gold, after a few applications of the Cement. This gentleman afterwards travelled into Wales, when from cold or fever the tooth began to ache so violently, that he sent for a country practitioner to extract it, who, much to his credit, on examining the part affected, and seeing the gold, recommended patience and a draught. This advice was followed, and the tooth has never ached since, although upwards of two years have elapsed. A sister of the same gentleman suffered severe pain in one of her eye-teeth while in the country, and came to town to have it cured. The Cement was once applied, and gold substituted a fortnight after, nor has pain returned. In the same family several cases of nearly a similar description could be named; but one, as it is of an opposite character, is more important. A younger brother was, with respect to the decay of his teeth, affected as the other members of the family; except that his decayed without pain, and were therefore neglected.

The author, on seeing them, stopped nine or ten, several of which, although they had never ached, were so tender to the touch that the Cement was required before the caries could be removed. This being applied, they were soon after stopped in the usual way: pain, however, shortly returned in two of them, but on the removal of the plug they became easy, and have been since left to their fate.

One of the front upper teeth of Lady E—— became painful on the application of cold or heat; the caries was not in sight, and consequently proceeded too far to be stopped in the usual way, until the Cement had been applied twice, when the tooth was stopped with gold, and has since continued well.

The Hon. Mr. ——— suffered such inconvenience and pain in the only remaining double tooth on one side of the under jaw, that his rest was disturbed almost every night for five months. His dentist, from the importance of this only tooth, repeatedly declined to extract it, and every remedy that money could procure was ineffectually tried. The tooth be-

came easy so soon as the Cement was applied, nor has there been any return of the pain, although the tooth was too far decayed to venture on stopping it successfully with gold.

The few subjoined cases will put the advantages of the Cement in a more striking light.

A Lady residing in Sloane-street, had been confined to her bed-room for upwards of a year, when she was attacked by a severe tooth-ache in an under small grinder. Her medical attendant in vain recommended its removal; she would not consent. A physician of eminence was then called in, who declared that if the tooth were not extracted, the patient must sink under her accumulated maladies. The Cement was applied in presence of the attending surgeon, and that very evening it relieved the pain. A fortnight after the tooth was stopped with metal; but as the lady's general debility rendered the operation difficult and uncertain, the plug, in the course of a few months, dropped out, though the patient has never had a return of pain, and nearly three years have since elapsed.

A member of the family of an eminent Judge suffered severely from tooth-ache during the greater part of her life, and had lost many teeth. Out of seven aching ones that remained among a very few sound ones, six, after repeated applications of the Cement, have been permanently filled with gold; and the remaining one, a large double tooth, with the nerve exposed, although not decayed, continues well, the Cement being occasionally applied.

A gentleman, holding a high situation under government, suffered much from tooth-ache, and had also lost many teeth. One, a wisdom tooth in the under jaw, became so tender that extraction was unavoidable. The gentleman, however, would first make trial of the new remedy; but the tooth was so tender that not even lint could be introduced. The decay was in the neck next the cheek, and the Cement was applied in its softest state; the pain was immediately eased, but the tooth could not be touched even the next day. Again, therefore, the Cement was applied without drying out the tooth, and permitted to remain as long as it would. In the course of the same week it

dropped out, but the tooth continued easy, and admitted of being dried out and cleansed. A fresh supply of Cement was afterwards introduced, which lasted a month, and the gentleman went into the country. On his return the caries was, without pain, removed, and the tooth loaded in the usual way. It ought to be remarked, that, together with the caries, the whole bony substance was removed, and the tooth permanently stopped: nor has pain returned, although nearly two years have since elapsed. It is hoped this instance will render the decisions, at least doubtful, of those who maintain that a tooth cannot be permanently stopped after the natural channel is exposed, and the nerves cut or decayed away. It is quite a common case.

The same gentleman, encouraged by the success of the first operation, had another tooth stopped which was much decayed, but did not ache. It was kept full of bees' wax or cotton dipped occasionally in spirits, for three years, during which time it did not sensibly decay. After it had been stopped with gold for about

three weeks, the gentleman began to experience unusual pains in his eye, and the side of his head, and, as he thought, about the roots of the tooth, which was an upper large grinder. He returned to ask if the thing could be accounted for. It was so: the gold was removed; blood flowed from the cavity; the tooth was restored to its former quiet state, and has ever since continued easy.

A Lady, residing with the Marchioness of ——— suffered much from an unaccountable pain in her head, ears, &c. for upwards of three years, during which time she consulted several medical men, to no purpose, and consequently began to believe that she was incurably affected with Tic. This lady had never sustained the loss of a tooth, although several had become carious.

The molar teeth in both sides of the under jaw were extremely tender on touch, and on application of heat and cold. Several dentists had tried to plug them, but they were too tender even to be cleansed, and so were permitted to remain. Their decay commenced at their

necks next the cheeks, and the caries, so far as it went, was as black as charcoal. It was therefore considered a case for the Cement, which was tried, and with success. Of the six affected, the two wisdom teeth were very much decayed, and their removal was recommended, which operation was performed by Mr. Cartwright, in his usual able manner. The four others were attended to and dressed about once a week for two months—the pains gradually ceased—the lady began to have good rest at night—and the four were stopped in the usual way before she left town for the Summer.

The Marchioness of ———, recommended by Dr. ———, had a molar tooth of the under jaw much decayed, and painful; she consulted the author more than once, before any thing was done. A long continued fit of tooth-ache, and some sleepless nights, however, overcame her scruples; the Cement was applied, but the pain remained undiminished during the night. The next day the Cement was to be renewed, but on learning that the tooth was then quiet, and had gradu-

ally become so from an early hour of the morning, the first portion was not disturbed, and the pain shortly after ceased altogether.

Two female servants of an eminent solicitor had each a severe tooth-ache cured, and their teeth permanently stopped a year before. This gentleman called one day with a noble lord, who suffered much from an under wisdom tooth that was nearly half decayed. The Cement was applied, and the tooth became easy; but the pain returned in the night more violent than before. Next day the Cement was removed, and the part washed; a powder was applied under fresh Cement, and the tooth continued easy when the nobleman was obliged to leave town for the season.

A lady, who usually resides in the country, had suffered so much from nervous affection of the head, as well as from a general debility, arising from the want of rest, that she came to London for the express purpose of consulting Dr. ———, as in addition to her other complaints, it was feared that she was sinking into a decline. In the course of conversation with

this physician, the Lady alluded to the Anodyne Cement, and asked him whether he was acquainted with it's peculiarities, or the character of it's inventor. The Doctor, with a pardonable distrust of such inventions, hinted his aversion to them, and advised his patient to go and consult some long-established eminent dentist, naming at the same time Mr. ———t. The lady, however—having repeatedly heard of its good effects, even in the most desperate cases—resolved to try the Anodyne Cement, which was accordingly applied to four of her teeth, with the usual success. In the course of a few hours she began to sleep, the first time for two months, without several folds of a handkerchief between her teeth. To the honor of Dr. ———, be it added, that he instantly expressed himself warmly in favor of the Cement, and watched the progress of his patient's cure with a zeal and a minuteness that not even indisposition could abate.

The same physician afterwards recommended Lady ——— to the author, to whose teeth the Cement was accordingly applied, and with

such decided and rapid effect, that in less than one minute from the time of its application, all pain ceased.

Master D——, son of the Member for ——— suffered severely from tooth-ache, not merely in all his front upper teeth, but also in several of the double ones. The disease had originated in lateral pressure, to obviate the effects of which, several teeth had been filed and stopped with fusible metal, and one excised by Mr.——. The metal soon dropped out of them all, the caries made great progress, and the pain returned in all that were so afflicted. In this stage of the case, as a last resource, several teeth were extracted, but even this proved insufficient, and the Anodyne Cement, being then for the first time heard of by the family, was accordingly had recourse to, which, as usual, afforded immediate and permanent relief.

Innumerable other instances could be adduced to prove that the Anodyne Cement will relieve and permanently cure, immediately or by repeated applications, the most inveterate tooth-ach, in every case where the disease from

long continuance has not become habitual; and even where it has, that the application of it will greatly relieve almost any case whatever. The author would certainly recommend the extraction of incurable teeth, and useless stumps; but he thinks it right to state what he has said for the comfort of those, who cannot be induced by any suffering, to submit to such an operation.

Before dismissing the subject, it is proper to refer to a practice lately introduced, but which is already dying a natural death, namely, the Excision of teeth. A tooth is sometimes successfully excised lower down than the disease, and the nerve may also be sometimes dragged out of the remaining roots; but in general the nerve either breaks where the tooth has been fractured, and continues to give pain until it withers away out of the reach of contact with food, &c., or the nerve of the part cut away may remain like a thread issuing from the channel in the root. In either case the treatment is to cut out the nerves so far as is attainable, when the patient will permit. The remaining

roots may continue free from pain, and in some instances be useful; but in general such roots can only be looked on as old stumps.

The author can refer to cases in his practice, where, after much suffering on the part of the patient, he had to apply the Cement to cases thus treated, and always with immediate success. And also in accidental cases where teeth have been broken by a fall or a blow, &c. As one additional proof of the superiority of the Anodyne Cement over every remedy hitherto used, he may state, that those who profess excision often attempt to stop tender teeth with fusible metal, after attempting to stun the pain by the application of icy cold water. This is a proof of the inefficiency of excision as a general remedy.

The doctrine of complete extirpation of such teeth as have none to meet them in mastication, could only have originated in ignorance of the art of supplying artificial teeth in its now improved state, or from inability to supply them, and the want of liberality in re-

commending others to do so.* This branch of the art, although sometimes contemptuously referred to by persons of this class, as merely mechanical, and beneath notice, is, in the author's estimation, of the very utmost importance, and requiring not only great mechanical ingenuity, but great science and professional zeal; he will, therefore, proceed to detail a few particulars respecting it.

Artificial teeth, it must be confessed, can never be so constructed as to render the preservation of one's own teeth a matter of complete indifference; but it is fair to instruct the public, if their teeth be really gone, in the best modes of supplying their places by artificial means.

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* A lady, recommended and sent by Mr. Imrie to have a carious and tender lateral incisor cured and stopped, informed the author that she had just been advised to have her teeth attended to by Mr. ———, another dentist. On further inquiry, it appeared that her adviser had a tooth extracted because it had no opponent in the other jaw; although the tooth was quite free from pain, and had been permanently and beautifully plugged with gold, three years before, by Mr. Cartwright.

SECTION II.

Tic Douloureaux.

INTIMATELY connected with diseases of the teeth, appears to be the dreadful malady Tic Douloureaux, a term improperly bestowed on almost every unaccountable pain, but more especially of the head.* Many credible wit-

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* Tic Douloureaux is neither more nor less than a nervous throbbing sensation, chiefly confined to the space of three teeth on each side of the upper jaw, namely, the two bicuspides and the first moleris.

BEW.

The first of a series of evening meetings was held yesterday in the elegant rooms of the Physicians' College. The object of these assemblies is to afford to men of science, an opportunity of meeting for the purposes of conversation, and discussion of matters connected with their pursuits. By way of giving a beginning to the evening, and of affording a subject of conversation, Sir Henry Halford read a paper on the Tic Douloureaux. In this essay he put forward a theory, that the distressing malady which was the subject of it, is produced either by a deposit of bone out of the natural course, or by an exfoliation of bone, the consequence of some disease or injury.

He maintained this notion with great ingenuity, and mentioned a great number of cases which had fallen under his own observation,

nesses have asserted, that it is nowise connected with the teeth, and instance cases where these have in vain been extracted to relieve it, particularly the melancholy one of a well known London physician, who, a few years ago, became its victim. Notwithstanding this, as instances supposed to be Tic come almost daily under the author's notice, without presuming to offer any decided opinion of his own on so delicate a subject, and one which appears to have baffled every attempt at a satisfactory exposition of its nature, he hopes to be excused if, on a subject of

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which tended to support it. In further illustration of his position, he produced a cranium, in the interior of which a most extraordinary deposition of bone had taken place, and the history of which strongly corroborated the theory for which he contended. The discourse was rather short, but was listened to with great attention, and excited, as it was well calculated to do, great interest. The rooms were fully attended; and, besides the most eminent professors of medical science in the Metropolis, there were many persons of distinction in other professions. Nothing can be more creditable to the good taste and liberal feeling of the College of Physicians, than this sort of invitation to social intercourse among men of science, and nothing more calculated to answer the purposes they have in view.

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anxious inquiry with many, he exceed the strict line of his professional pretentions, and state generally, a few of the cases with which, from time to time, he has been practically acquainted, and which were apparently produced by carious teeth in their various stages of decay.

Anomalous pains of this kind are frequently occurring in teeth which were free from any pain when stopped, and may be the result of temporary inflammation in the bony substance, or of its blood-vessels, or in the sockets, which might yield to opening medicine, and remain easy when permanently stopped; or may be the result of a diseased state of the nerves, rendered incurable from long continuance, unless it were possible to cut or burn away their diseased surface, which operation not unfrequently leads to a more healthy action of the parts, permitting such tooth to be permanently stopped. But when moisture oozes from the decayed surface, and, accumulating, forms matter under the plug, the most painful consequences frequently ensue, which the early

removal of the plug would prevent; or if only temporary inflammation has taken place, the tooth may, after a time, be safely re-stopped. In some cases pain will ensue, with swellings of the parts, in the course of an hour or two, while in others it may not take place for weeks or months.

The swelling often extends to the bones of the jaw, but will generally subside if the exciting cause be soon removed;—it, however, sometimes becomes permanent, and may be with or without pain. Results precisely similar often take place from the accidental filling up of a hollow tooth, with food or any other substance which is either sufficiently solid or clammy, for a time to seal it up; the bodily system having been predisposed to inflammation. Is it not probable then, that such circumstances are sometimes the exciting causes of even Tic Douloureux? The following CASES appear to the author to bear him out in this opinion:

The most decided case of the kind, and which, from its violence and permanency, he

has ventured to consider as allied to Tic Douloureux, which has fallen under the author's notice, is that of a lady, who has suffered severely from the complaint for several years past. So violent and long continued have been the attacks, that she has been unable to attend to the ordinary affairs of life, and her friends watching her by night and day, have long ceased to indulge in the hope of her perfect recovery, or a cessation of her suffering.

The malady exists in the one side of her upper jaw, over stumps and excessively carious teeth. The pain is not continuous, but the intervals of repose are short, varying from minutes to hours and days, and even weeks.

The pain commences with a severe throbbing sensation, and more particularly if any attempt is ever made to examine those carious teeth. Even opening the mouth appears a sure cause of a fit. It is upwards of two years since the author had occasion to know the case, which was on account of some teeth (the corresponding ones) that began to

be carious in the other side of the same jaw. In one, (the first large grinder,) the decay commenced in the natural indentation of the grinding surface; in the one beyond, a piece of its side next the cheek was broken off, and exposed the nerve;—the two small grinders were also carious from lateral pressure, and they had all become tender, accompanied with occasional attacks of tooth-ache. The Cement was applied to all, except the first named, which was not so bad as to require it at first, and into it gold stopping was introduced.

The application of the Cement, a substance of much the same appearance and consistence as soft putty, is almost as quick as thought; and in delicate cases, not calculated to cause annoyance: where the successful introduction of gold would, from the tenderness of such teeth, be quite impracticable. As often as any attempt was made to clean out the diseased cavity, an attack of severe pain always cut short the process. At her own desire gold stopping was attempted to be introduced, but so ineffectually was it done, that after several

months the tooth began to ache, when it became necessary to remove the gold entirely.

The Anodyne invariably and instantaneously allayed the pain of it, and also of the other carious teeth as soon as applied, and as they continued free from pain for weeks, and even months together, after each application; and as any attempt at a more permanent operation was always attended with agonizing pain in the side first affected as often as the mouth was stretched open, all further attempts at a more permanent stopping of any of the teeth have been altogether abandoned.

Case. — A gentleman having his teeth cleaned, and several stopped, had one so tender as to require the application of the cement. It was the second small grinder in the under jaw of the right side. He complained of tenderness in the two upper small grinders of the same side, but in which no symptoms of decay were visible. On probing between them with a point, decay from lateral pressure was discovered. A separation was immediately effected with a file, and other

cutting instruments, in order to admit of cleaning out the caries, and stopping the teeth, each one requiring to be separately attended to.

The caries was discovered to have proceeded so far, that it could not be thoroughly removed without repeated applications of the cement, after which the teeth were permanently filled with gold in the usual way.

During these operations, Tic Douloureux became the subject of conversation. The gentleman said he had suffered severely from it under and near the left eye, about four years before. For four months, he continued, he was in a state bordering on delirium: his friends watched by his bed side by turns during the whole of that period. The pain at last ceased, and he recovered his usual health; nor had he any return.

On a further examination of his mouth, the roots of two decayed teeth appeared black in the gum. By the way he was not conscious of having had tooth-ache during any period of his life. The roots were in the upper jaw,

and corresponding with the two just stopped. An attempt had been made to extract them within the previous two years, because they became offensive, but they were broken in that attempt. The probable time they had taken to decay laterally, from the first stage to the period of the attempt to remove them, might have been between two and three years; so that there is little doubt that if the gentleman's teeth had been duly examined and extracted, or cured, previous to the severe inflammation of their nerves, and the consequent symptoms attending his case, the suffering he endured might probably have been prevented. No other manifestations of the malady now remain, except the roots of the teeth over which, in the jaw, all the pain had been experienced. The gentleman is in a public office, and his friends are high in station.

Case.—The Lady of an eminent Divine suffered much and long from nervous headach, and occasional twitches of tooth-ache, which produced restlessness, and want of sleep to such a degree, as to threaten her very existence.

Medical aid was had recourse to in vain, nor were the teeth even suspected, until Dr.——— who had on several occasions witnessed the beneficial effects of the Anodyne Cement, recommended that the teeth should be examined. Several were discovered to be faulty; the Anodyne was applied; a soothing sensation was soon experienced. The gums were spongy from the great collection of tartar that clung to the teeth. The tartar was completely removed, and the gums were restored to a healty state, by the severe and daily use of a hard tooth-brush. The teeth, five in number, at first so tender as scarcely to admit of being wiped, were soon after stopped with gold in the usual way. The lady gradually recovered her wonted health and spirits, and, after the lapse of about a year and a half, she remains well.

Case.—A young lady of about sixteen years of age, suffered much in the same way for about four months. She gradually declined in health and spirits, nor could all the art of her medical attendants alleviate her

sufferings, nor bring her repose. The usual advantages of the country, and even the sea-side, proved unavailing. Her teeth were tender on the application of heat or cold; but they were not so bad as to excite any particular notice. Dr. ———, Physician to the Duke of ———, on seeing the case, suspected the teeth, and waited on the author with his patient. The Anodyne was applied to several of the young lady's teeth; she felt instant relief, had a good night's rest, and improved forthwith. She is now well, and can eat with those teeth that were so tender, for they are now permanently stopped with gold.

It would be easy to fill a volume with cases of anomalous pains like the above, which the author leaves it to those more conversant with that formidable malady the Tic Douloureaux, to decide, if they were in any way allied to it. Suffice it to say, that there are many instances where the extraction of the teeth could apparently relieve the pain, but in which many obstacles oppose themselves to such a measure,

partly from the insufferable horror of many to have a tooth extracted, and partly from the uncertainty of the affected teeth being the exciting cause of the malady. The Anodyne Cement has its peculiar advantages to recommend it. It can be applied without pain, and it is, in general, equally effective, if not more so, than extraction. In conclusion, it may be permitted to remark, that in all those cases which have fallen under the authors's observation, there has been an unsound tooth underneath the seat of the pain.

ARTIFICIAL TEETH.

VERY little new or important matter has been added to the public stock of knowledge respecting the teeth since the time of HUNTER, whose able and elaborate Treatise on that subject has been the mine from which almost all his successors have, in some shape or other, drawn their literary wealth.

As regards Artificial Teeth, in particular, scarcely a single work can be found competent to instruct either the public or the dentist; and it is from a firm conviction of the necessity of some Treatise on this last department of the art, that the Author has presumed to

come forward, not so much in the presumptuous hope of perfecting the system, as of leading the way to future material improvements.

The art of supplying artificial teeth, so as satisfactorily to answer the purposes of natural ones, is as yet but little understood, and still less practised. Hence the antipathy so generally evinced towards the adoption of them—as in the analagous case of scaling, that is, cleaning the teeth with instruments. Because some mischievous pretenders have rendered them white by the injudicious use of acids, a violent outcry has been raised against scaling in general; whereas the plain truth is, that to cleanse the teeth, when matter has offensively accumulated about them, with instruments, and finely powdered pumice stone, is so far from being injurious, that it is actually an indispensable operation, and as harmless as the application of soap and water to the skin.

With reference to artificial teeth, we may take this opportunity of stating, that they can do no more injury than those whose place they

supply could have done had they remained sound, while, provided that they be adequately manufactured, they may be rendered nearly equally serviceable. In a case, therefore, of such moment, and one referring itself so closely to the convenience of nine out of ten individuals, it becomes highly necessary that the public should have at least some little insight, some glimmering of information on the subject.* If a protracted apprenticeship be requisite to perfect the tailor, the shoemaker, or the grocer, much more are time and experience needed to form a first rate dentist; a profession, however, which has been but too often abused. The cause of this is obvious. In most trades and professions some ordeal is required, some indisputable voucher of ability, before public confidence is granted. But the dentist

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* When the teeth are lost, it is impossible to make use of solid food; and if the stomach is then loaded with pieces without being masticated, the person is exposed to the most distressing indigestions The stomach loses its power of contraction, and it becomes weak in proprotion as it no longer digests. We can only then remedy that state of langour which is the consequence, by replacing teeth in lieu of those which are lost.

DE CHEMANT.

puts forth no such certificate he launches at once into practice; (his business being unregulated by fixed rules, as is the case with law or medicine); and he is not scouted as an empiric, until the effects of such empiricism have become too glaring to escape general detection.

But to enter more immediately on the subject before us.

In constructing artificial teeth, Utility and Appearance are mainly to be considered by the dentist. The former refers to the plan adopted in a particular case, and the success with which it is executed; the latter to the successful imitation of nature, as well in the form and proportions of the teeth, as in the shape and expression of the mouth.*

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* In consequence of the complete, or even partial, ruin of the teeth, the face shrinks, the voice loses its harmony, becomes shrill, or is lowered, and the pronunciation, of course, very imperfect. The countenance assumes a different expression; is harsh, or morose; the flesh of the cheeks will flay, and hang down; wrinkles will prematurely furrow the face, the dimensions whereof are no longer the same as they were. The mouth and nose also change; the chin seems to be longer, and in reality approaches nearer to the latter organ: in short, every part of the face is discomposed in a more or less offensive degree, and presents the anticipated sight of painful destruction. JERBAUX.

In order to be useful, artificial and false teeth must be set on plates of bone or metal, adapted to the form of the gums, at the parts where teeth are wanting: or by pivots introduced and fastened in stumps. This latter plan is applicable to all the front teeth and two small grinders, and when well executed, is capable of defying the closest scrutiny to detect the deception; while, if they are well supported by double teeth to prevent their shutting against those opposed to them in the other jaw, so as not to shake and loosen them in their sockets by lateral and forcible collision, every time the mouth is shut, as in old people, after losing all their double teeth, they are almost as useful in every respect as those whose place they supply could have been.

Artificial teeth are made of the hardest ivory, generally the sea-horse tooth, or of mineral paste, a sort of china.* These latter,

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* Mineral teeth are composed of baked earth, covered with enamel flux, and coloured to imitate nature. No way of attaining a perfectly natural appearance has yet been attained, but by placing in

could a sufficiently natural appearance be given to them, and could they be equally well adapted as other teeth, possess the advantage of being very cleanly, and might be made to answer in cases of pivoting; but they have not been brought to such perfection yet, and from their very nature they never can be made to answer well in more extended cases ; for in baking, they lose so much in shape, as never to fit comfortably in their place; and the mouth is injured, and the remaining teeth are loosened and twisted in accomodating themselves to mineral teeth.

Artificial teeth formed of ivory, can be made to imitate nature by any person having the slightest mechanical skill; and they can,

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human teeth of the same description as those whose places they are intended to supply.

Entire sets of teeth are worn with great ease and satisfaction, when well made and rightly adapted. The construction and adaptation of artificial teeth is an art in which some greatly excel others. Some teeth are so ill made and unskilfully adapted, that they are troublesome to the wearer, an impediment to speech and mastication, and even a greater blemish to the countenance than the want of teeth: those that are well adapted are on the contrary, easy, useful, and ornamental. Jos. MURPHY.

in some particular cases, be formed with the natural enamel on them. This last mode is had recourse to for persons who object to false teeth, and who also dislike the discoloration of the ivory, that inevitably takes place when in use in the mouth. Generally speaking, however, false teeth now excite but little repugnance on the part of the public.

They are supplied principally from the Continent, where the examinations of dead bodies for the benefit of the living, do not call forth the same feeling as in this country. Dead teeth, then, being the most perfect imitation of nature, and having their own natural enamel on them, are most commonly used.

When they are to be fastened by means of pivots,* their roots are cut off at a proper

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* *Grafting or Pivoting Teeth on Stumps.*—When either or all of the six front teeth are decayed and painful, or so unsightly as to render their presence disagreeable, natural teeth may be fixed to the roots. Whenever this method of affixing teeth can be adopted, it is far preferable to any other; for as long as the roots remain firm, which is often many years, we can renew them at any time, without the least inconvenience, as they are independent of any other teeth;

length; the roots on which they are to be pivoted are filed smooth, as high in the gum as possible, so that when the false tooth is fixed, the gum resumes its wonted place, and embraces the new tooth.

In cases where no roots remain to which new teeth could be fastened, plates, so formed as to fit and rest easily on the vacant spaces in the jaws, are made of ivory, or of metal, usually of gold; the false or artificial tooth or teeth are cut to the proper length and riveted on the plate; or a pin is previously soldered to the plate which enters the natural cavity in the new tooth, where it is secured by means of thread wrapped in sufficient quantity around the pin to keep the tooth in its place. In this part of the operation there is a secret, as yet known only to a few; it consists in dipping the pin and its binding in spirit varnish, which assists materially in fastening the tooth, and resisting the admission of moisture. Perhaps it would

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they may be fitted so nicely, as to defy detection, even on minute inspection. If the root is sound, they will, by their firmness, answer every purpose, almost equally well as the former natural teeth, whose place they occupy

J. FULLER.

be an improvement so to varnish all artificial teeth occasionally, as if not carefully attended to they absorb so much moisture of an unpleasant character, as to become offensive. Exposure, however, to a draught of pure dry air does away, at any time, with this inconvenience.

As plates of bone are used as well as of gold, it may be proper to explain how sometimes the one and sometimes the other is to be preferred.

In the case of an old person, after all the teeth have disappeared, the face becomes shorter by about an inch and a half, almost the extreme length of two teeth as they meet in the two jaws. To restore the former length of such a face, if gold plates be used, the false teeth must be fastened without cutting off any part of their roots, which would give a hideous appearance to the face. The teeth, from the absence of sockets and gums to conceal their roots, would have the appearance of rails with wide spaces between. To obviate this inconvenience, the roots of false teeth are cut

off when they are to be fastened on gold plates. In consequence of which, if the sockets of the former teeth be absorbed, it is impossible to restore the natural length of the face. Notwithstanding the incompatibility of this method, in such a case it is frequently adopted, and is set down as an evil inseparable from the art. For although the teeth look natural enough, there is such an unnatural shortening of the face, and a falling in, with wrinkles of the cheeks attending them, that any one, however regardless of fashion, would rather go without. The inconvenience attending gold plates, where the teeth, together with their sockets, have altogether or very much disappeared, is readily remedied by plates of ivory.

Gold plates are raised on brass models of the jaws, as spoons on a die ; plates of ivory are dug into with gravers and chisels on models of plaster, hardened by boiling in strong alum-water, or by absorbing dissolved bees' wax before a fire. The model is, as often as required, painted over with a colouring matter

as oil paint, to prevent its drying too soon. A block of ivory cut to the proper size is then laid horizontally on the model, when the paint leaves a speck at every point of contact. These points are cut out with the graver, the ivory is again applied, and the same process gone through, until the ivory presents an exact reverse of the model, and becomes in fact a mould of the jaw. To do this well is extremely tedious, although many dentists make short work of it, and apply the coloured points to the whetstone. The success in affording comfort to the wearer of artificial teeth made in this way, and the price put on such work are in general equally small, and will account for the advertisements which offer such things at less than half-price, &c. To form a piece of ivory so as to sit easy in the mouth, and not spring up at one point when pressed on at another, is by no means easy; nor can it ever be done by an unskilful artist, however neatly he may execute the work. The ivory must be applied in a horizontal position to the wet model every time, and at exactly the same

points from first to last, otherwise it cannot be made to fit exactly. In some cases, an under jaw for instance, without double teeth on either side, may have one side much higher than the other, in consequence of the sockets being less absorbed on one side than the other. To save trouble, some persons would fit to such a model, applying the under surface of the ivory, suppose the size of a pack of cards, not horizontally, but at an angle, that would permit it to touch both sides of the jaw at once. On such a model were one scientific and another purely mechanical dentist to form plates, the former having never permitted the under surface of the bone to touch the model but in a perfectly horizontal position, while the latter adopted the quicker way of applying it slantingly to both sides at once, the plate made by the latter, although appearing to fit the model equally well as that of the former, will spring up on one side when touched, as in mastication, on the other, and no ingenuity can prevent it but at the expence of much pain to the wearer, from the use of strong springs and clasps; while

the plate let down horizontally, and carefully cut with more than double the labour, will sit like a rock at every part, when pressed at any point. In this way plates of bone can be made to sit easy in any mouth without tying, and without extracting stumps or teeth that are firm, whatever be the shape of the jaw.

If you suppose the under jaw of an elderly person, where only the front teeth remain, and that artificial grinders are to be supplied in both sides of it, they may be constructed of one piece of ivory, or of a separate small piece for each side, and united by a bar, as it is called, passing under the tongue, from one side to the other, inside the remaining natural front teeth, and forming the two pieces thus united into one frame. If it be necessary in order to ensure the wearer of such artificial teeth in the comfortable use of them, that for both sides of the jaw they be constructed out of one solid piece of ivory; it will explain why artificial double teeth, in the under jaw, when those of both sides of it are united by means of a gold bar passing from one side of the mouth to the

other, can never be made to wear comfortably, until at last, after much inconvenience, the gum has adapted itself to such a state of things; for no human ingenuity can set or join the component parts, or both sides together, by means of a bar, so perfectly as not to occasion pain to the wearer.

In attempting this process, such artificial teeth are fastened by strong clasps to the remaining front teeth, which, in consequence of being dragged by the unsteady motions of their new allies, become loose in their sockets, and drop out; or they waste away by the friction of such collars. This method is adopted to save the expense of a block of ivory, as two small pieces appear to answer equally well, and this is one reason why mineral teeth invariably occasion the loss of the remaining sound ones. A dentist, then, who understands his business, will, in such case, not only not occasion injury to sound teeth, but by judiciously supporting them by artificial ones, well constructed, will cause them to last the remainder of life.

In explaining where gold or plates of ivory are to be preferred, it will readily be seen how, when the latter have been made to rest as easy on the gum as the former, they possess another grand requisite, bulk with lightness. The surface or scoop which is to rest on the gum, being completed, a proper form is given to the whole mass, and that form, as nearly as possible, what the jaw was previous to its losing a single tooth. Long before the block is reduced to its smallest dimensions, it is frequently introduced to the mouth, and made to undergo the same process by colouring the natural jaw as it was previously on its model, unless, indeed, as it sometimes will happen, that it fits the mouth at once. To fit in the mouth, and on a model, are, in practice, very different things: and we accordingly find, that artificial teeth beautifully executed and adapted to a model, are frequently made only to be laid aside by the intended wearer as soon as sent home; for there are makers of artificial teeth that send them home, when finished on a model, like a coat or a shoe, for better or worse.

Ivory plates then, being specifically lighter

than gold, have, in their proper place, from the quantity that may be employed, a decided advantage over gold, which, consisting of thin plates, is only applied as a basis to fasten teeth on, and not to fill up vacancies in the jaws; in addition to which advantage, the same piece of ivory may be made to represent gums as well as teeth. It also supplies the place of the lost sockets of the teeth, which, in reality, constitute the substance that swells out, and gives both length and breadth to the face about the mouth; for the gums never quit the living jaws, although they forsake the teeth as is indicated by their roots becoming exposed when their sockets are absorbed, and the gums sinking down to the jaw-bone.

Cases occur where the union of ivory with gold is required, but even in these the gold must be raised on successive models of the mouth, and adapted with the same care and exactness, as if no ivory were to be applied; that is, the gold plate must first be made to fit the gum, so that no pressure, as in mastication, should give pain; and the bone must be afterwards fitted down on the gold for a model, and formed into teeth, as

if ivory only were to be used This mode is applicable where a jaw has irregular vacancies, and remaining teeth and stumps of various lengths and unequal parts to be artificially filled up, and as the whole frame is much better for being of one unbroken piece, a gold plate is the preferable connecting substance on account of its thinness. This plate is not to be confounded with the gold bars already alluded to. Without the adoption of this mixed plan, it would sometimes be necessary to reduce the ivory to so thin a state in some places, as to render it totally unfit for use. By a proper union of gold plates and ivory, a case wherein every other tooth was wanting, and the remaining ones almost of all shapes and sizes, could be made comfortable without extracting any.

In order further to illustrate the advantages of a combination of gold and ivory, let us suppose a case where so many double teeth have been lost as to occasion a nearer approach of the chin to the nose than formerly, the natural consequence of which will be, that the front teeth of the one jaw, by the un-

ceasing and forcible collision every time the mouth is shut, against those of the other, will loosen them in their sockets and grind them down. To obviate this, filing is often had recourse to, which is bad, in so far as it only produces a temporary advantage by violent means. The natural disposition of the alveolar processes, or sockets of the teeth, is to eject those that are without opponents in the other jaw. While the cause of the first inconvenience is permitted to remain, teeth shortened by filing soon lengthen again, for they quickly arrive at their old post, while the natural process of ejecting them produces ulceration of the membrane of the socket, which, in many persons, continues for life, or until such teeth are removed. The proper remedy then, where an undue pressure of the front teeth of one jaw is exerted against those of the other, is to cap the remaining teeth with gold.

To understand the necessity of this, let any one examine the mouth of a person whose teeth are perfect. The front teeth of the two jaws when the mouth is shut, will be

found in contact simply, and incapable of retaining forcible hold on any thin substance, as a piece of riband for instance; while the double teeth take a hold that no human power can shake without the consent of the party. Undue pressure was the cause of the front teeth becoming loose, and that cause may be removed temporarily by the introduction of a piece of card between the remaining grinders, any where in the mouth. Hence it will be seen, that the proper remedy for loose front teeth, is to cover the grinders over with caps of gold; for ivory, if reduced to the necessary degree of thinness, would soon be bitten through. The empty spaces between the remaining teeth might be filled up with ivory formed into teeth,* their grinding surface being in the same level as those covered with gold, when so covered as to occasion an

* Some essential improvements have contributed to the success of the art of dentists. First, by dint of following scrupulously all the inequalities of the gums, artificial teeth, placed upon a basis, meet with a much more suitable and steady support upon the gums.

LEVISON.

equal pressure on all the grinders; for if you make one tooth longer than the rest, all the pressure of the mouth comes upon it, and occasions inflammation in its sockets, accompanied with intolerable pain. The same effect is produced by a plug in the crown of a tooth if left too high, and that it can be felt on shutting its opponent against it.

In many cases teeth made of ivory alone will remedy the injury here alluded to, by keeping off the pressure of front teeth; but should any double tooth remain that is not permitted to touch its opponent in chewing as before, that tooth will soon become troublesome. Hence it is, that sound teeth are frequently extracted, that an artificial piece of teeth may be applied with any tolerable chance of being useful.

Many persons, rather than have a sound tooth, or even a useless one extracted, forego the advantages of artificial teeth, although possessed of the means and every inclination to possess them. To such it must be satisfactory to know, that artificial teeth can be applied to

almost any case whatever, without extraction; and that those Dentists only recommend the extraction of sound teeth, who are unacquainted with the construction of artificial ones, or are too illiberal to recommend others.*

In a Metropolis like this, where the division of labour, while it cannot injure the individual, is attended with advantage to the public, the art of the dentist admits of several subdivisions. Presuming on this, the author has long restricted himself to one department, viz. Preserving the Natural Teeth, and with a degree of success fully commensurate with his

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* Not one of the molares should be permitted to remain that has no antagonist, particularly if it is situated in the upper jaw; inasmuch as such teeth being deprived of that necessary stimulus which arises from mastication, their periosteum soon becomes relaxed, and consequently predisposed to this disease; besides, the utility of such teeth being lost by the want of an opposing surface to act against, they influence the surrounding parts like extraneous bodies.

Every tooth which has lost its vitality, including all stumps, and all such teeth as from their irregular situation or direction, excite a mechanical irritation, provided this irregularity cannot be remedied by filing, or by cutting away the irritating parts, should also be removed.

L. KOECKER.

expectations. These operations consist in Scaling, that is, in freeing teeth from extraneous matter, and Brushing spongy gums into a healthy state; in Examining from time to time, teeth that, from their shape and situation, are liable to decay, and at the proper time Cutting out the commencement of caries, and thereby Preventing its farther progress by the introduction of gold stopping, by means of which a smooth even surface, incapable of retaining moisture long enough to rot in, is obtained, instead of the indentations where the caries commenced; in Curing tooth-ache and tender teeth by means of an Anodyne Cement, (the author's peculiar method,) and cleansing them previous to their being permanently stopped in any approved manner, which operation they then admit of without pain, as if they had never ached; in Relieving children from tooth-ache, to prevent the premature extraction of shedding teeth; and after the teeth have been lost through accident, heedless extraction, or old age, in pointing out the most appropriate mode of Supplying their place by

artificial means, together with the person most likely to do it well.

In order fully to appreciate the advantages to be gained by artificial teeth and plates for the mouth, let us refer to the natural forms of the human mouth. In some, and they are by far the greatest number, the front upper teeth shut outside the under ones. In others, the cutting edges of the front teeth of both jaws meet in the same perpendicular line; while in the third case, those of the upper shut inside the under front teeth. This last form is called under-hung, or having a projecting chin.* A projecting chin, like squinting, is frequently the result of a bad habit acquired by imitation in early life, and is considered somewhat of a deformity. It is,

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* In the most general, and also the most regular, beautiful, and convenient conformation of the jaws, the teeth of the lower jaw, which is the segment of a smaller circle, shut within those of the upper. When this is not the case, the result is an unpleasing projection of the chin, and also a slight affection both of the voice and of the operation of masticating. As this conformation is both a deformity and inconvenience, it should be remedied at as early a period as possible; and if it be taken in time, its correction is neither dangerous nor difficult

ANDREW CLARK.

in many instances, produced by the injudicious extraction of some of the upper teeth in early life, without removing an equal number in the under jaw.* Cases are to be met with where those of the upper jaw shut partly inside and partly outside their opponents in the under jaw. This is surely the result of negligence in early life, and might have very easily been remedied by any dentist; or even by the child himself were the method explained to him; suppose, by the use of a thin slip of wood or

* It is about the time of the completion of the first teeth that the projecting under jaw gradually begins to shew itself, and shortly before the appearance of the second set from the surface of the gum. At the first commencement it occurs that one or both of the first eye teeth in the under jaw, are somewhat longer than the rest, and are pointed on the top, so that in shutting the mouth, the under jaw is so prevented taking its proper direction. The child not being aware of the pernicious consequences, stretches out the lower jaw, attempts in that manner to overcome the difficulty of the free action of the teeth, and constantly is seen in the act of pushing the lower jaw outwards: this unobserved or neglected at first, grows into a determined habit; and a mischief at first easily controlled, becomes the foundation of this defect; for the jaw gradually lengthens itself out from the articulation on each side, to relieve itself from the bad position in which it was placed, and thus the jaw becomes completely under hung. The remedy in the very early stage of the deformity, is very easy, simple, and satisfactory.

SIGMOND.

ivory, to serve as a bridge to assist the upper tooth over the under one.

Each of these three forms is liable to injuries peculiar to itself, although the remedy is much the same in all. Front teeth that shut over the under ones, if the support of the double teeth be removed, are pressed against them laterally every time the under jaw is raised in shutting, the natural consequence of which is, that the posterior surfaces of the upper ones are ground away, or they are loosened, their sockets becoming absorbed from incessant irritation. The same thing occurs in some persons even before the grinders have been lost, partly from the greater length natural to their front teeth than the back ones, and partly from the gradual abrasion of the surfaces of the double teeth. In such a case the cutting points of the upper front teeth reach at the under gum, or the under ones touch the roof of the mouth and irritate and inflame it; the teeth all the while becoming loose, and the patient finding no relief but by placing something between the grinders of the two jaws to prevent the contact of those in

front. The remedy for this evil is extremely simple and effective, but the execution difficult, requiring great mechanical skill and ability to work in metals. The grinders must be lengthened. To understand in what manner, suppose a piece of card placed between the double teeth when the mouth is shut, and by similarly using a plate of metal or of bone, formed into caps, as gloves fit the hands, with which the usual functions of teeth can easily be performed, the teeth thus covered are lengthened. This plan is sometimes adopted to fasten artificial palates where they are required, the plates being so constructed as to cover the whole roof of the mouth nearly as far back as the uvula.* In some

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* Children are frequently born with malformation of the lips. Every species of this deformity is called hare lip. The fissure commonly affects only the lip itself. In many cases, however, it extends along the bones of the palate, even as far as the uvula. Sometimes these bones are totally wanting; sometimes they are only divided by a fissure. Such a malformation is always peculiarly afflicting. In its least degree, it constantly occasions considerable deformity; and, where it is more marked, it frequently hinders the infants from sucking, and makes it indispensable to nourish them by other means.

instances, where the difference in length between the front and back teeth is great, after

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When the lower lip alone is affected, which is more rarely the case, the child can neither retain its saliva, nor learn to speak, except with the greatest impediment. But when the fissure pervades the palate, the patient not only never articulates perfectly, but cannot masticate or swallow, except with great difficulty, on account of the food readily getting up into the nose.

HOOPER'S MEDICAL DICTIONARY.

The natural want, or the casual destruction of that delicate organ, the human palate, is attended with the most unpleasant of all effects, the loss of voice, and of the many substitutes which we have, very few have those advantages which could be wished. The common metallic palate seldom fits well, and always gives pain; while those of gum cautchoue, and other elastic substances, are offensive, and also, by pressing asunder the parts, increase the deficiency. The removal of them all, for the purpose of cleaning, is a work of some trouble. We have seen a silver palate, constructed by Mr. Andrew Clark, a very ingenious dentist, which obviates many of the objections to the old construction. It fits the parts with the utmost nicety, and as it does not at all press upon the edges of the deficiency, it allows the parts to contract, or even to be to a certain extent reproduced, while the wearer can take it out, clean it, and replace it, in two or three minutes. When it is to be removed or put in, the wings which fasten it to the upper side are made to collapse into a very small space; and after it is put in its place, they are made to expand and embrace the edges of the bone, with any degree of tightness that may be necessary. The whole machinery, which is very neat, is worked by a small button in the centre of the palate, so flat as to give no uneasiness to the tongue, and yet which can be moved with the greatest ease. Besides the facility with which this palate can be removed and replaced, the great advantage of it consists in the accuracy with which it fits the parts.

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the first plate of gold has been adapted to the jaw, layer after layer is soldered over it, until the teeth have attained the requisite length to prevent the contact of the front ones.

If the plate be on one jaw only, it never can be worn comfortably until the double teeth opposing it in the other jaw lock into it when the mouth is shut, as naturally as they formerly did into the surfaces of the natural teeth. This is accomplished by drying the teeth opposed to the plate, and touching them with paint. The patient shuts his mouth until the plate is touched by the paint. The points of contact are always cut away with the graver until all the teeth meet the plate fairly at every point, when no pain or inconvenience will any longer be experienced in using them. Rather than have recourse to a plate, many persons will submit to the loosening and loss of their front teeth, in order to have them artificially restored. One thing is evident from a knowledge of the above process, that the dentist who could render such a plate comfortable to the wearer, must, himself, be a

competent workman; or the real workman must be taken from the back shop to fit it in the mouth; but this is never done.

In animadverting thus on the practice of others, it is not the intention or wish of the author to injure them; but as far as possible to explain to the public what they have a right to expect, and that they, from a competent knowledge of their wants, may properly appreciate merit wherever it is to be found.

Beautifully executed artificial teeth, like decoyducks, are to be seen hung out in windows, and in advertisements, when the parties professing to have made them cannot even bend a wire or a clasp to a tooth without breaking it. Such dentists, perhaps, never formed a single tooth from ivory, never raised a gold plate on a model, and never made the wearer of artificial teeth comfortable; and they never can. The real maker of artificial teeth, that is, the person who can do justice to his patient, has much to do in his presence; nor can his skill, or the want of it, be concealed from an observant

patient. But he too frequently, perhaps generously, ascribes the apparently unconquerable difficulty to the art, and not to the artist.

If health be desirable to those who wish to live long, surely nothing contributes more to a healthy digestion than a good set of teeth. No pains then, it is presumed, can be too great on the part of the public and the profession to attain the utmost perfection of which the art is capable, and that can only be done by making public every improvement, and exposing humbug.

Suppose in a case like that attempted to be described above, a front tooth decayed to the gum, and its root calculated to receive a new pivoted tooth. If the tooth whose place was to be supplied had decayed, or was otherwise injured, and lost in consequence of the lateral pressure of its opponent in the other jaw, that same pressure would still continue to affect its successor; and in order to avoid this, the new tooth is filed down so thin as scarcely to retain the gold pivot. This then, would be a case of bungling. In the same instance, suppose the root

also gone, in consequence of the tooth originally becoming loose from friction; a plate or socket of gold, or of bone would be necessary, on which to fasten the false tooth. The whole would be fastened to the adjoining teeth. The pressure of one jaw on the other being still the same, not only would the new tooth be constantly shaken in its place, but the tooth on each side to which it had been fastened. So backward is the state of the art that, in London, many dentists fasten false teeth to the adjoining firm ones, by means of silk ligatures; this will, of course, keep them in their place, although dangling and loose, until those to which they are made fast drop out, which, in general, is very soon the case. By-and-by a new piece with three false teeth would be required, with similar results and greater advantage to the dentist; and so on ad infinitum. For the truth of all this it is only necessary to refer to the great mass of wearers of artificial teeth. A dentist who understood his business, and had honour enough to practise it conscientiously, would decline

the case altogether, unless permitted to accomplish it in his own way. Many instances are to be met with, in which fast teeth become loose from friction on an artificial one, where no necessity existed for such pressure, and all through the unskilfulness of the dentist. The author has met with cases where, for instance, the constant friction of the under natural teeth against the socket of an upper false one, had loosened two more, and produced ulceration of the gums; by cutting away the points of contact from the artificial socket, and recommending a discontinuance of the artificial tooth for a few days, the whole became well again, and was worn with comfort and advantage.

In treating of gold plates, it is necessary to explain how they are usually got up; as on this depends much of their utility and comfort.

A mould of the jaws to be supplied with artificial teeth, is taken from the mouth in wax softened in warm water, and introduced on a horse-shoe plate, turned up at the sides like a spoon. Into this mould is poured pre-

pared plaster of Paris, which, when it has set, is easily disengaged by re-introducing the whole into warm water, until the wax has again become soft. The exact form of the mouth is thus procured, if much care be bestowed on the process. When a plate of gold is wanted, a fac-simile of the plaster model is cast in brass, on which the gold plate is beaten into form. In the way gold is generally used one model will be sufficient; those dentists who excel use several; for the brass itself is soon put out of shape by the repeated strokes of the hammer. If any of the teeth are to be covered with caps, these caps must be formed out of the same plate, and they must fit every tubercle and indentation natural to the teeth they cover, as if melted on them. Otherwise they never can be used in mastication. In this way even carious teeth, where there is a dislike to extracting them, may be covered over and rendered serviceable. But the usual way is, to form the plate rudely to the gum and palate, bending it as may be required with

pliars.* Such plates can never be made to fit well; and in order to secure them in their place, they are fastened by strong collars to the remaining teeth. The natural consequence of which is, that sound teeth thus collared are soon dragged out by the roots, if any undue pressure be applied to the plates any where else. Such plates are very heavy, and by their weight alone drag out the teeth to which they are made fast.

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* The best mode of placing in the teeth, is strongly to rivet as many teeth as are wanting on a plate of gold made hollow, and fitted for the gum to rest in. The plate containing the teeth is attached to the adjoining teeth by means of elastic gold claws, or springs, placed so as to embrace them. But this mode cannot be indiscriminately applied to every case.

When a partial deficiency of the teeth is supplied with judgment and skill, it is the means of preserving the remaining natural teeth, by becoming a support to them.

Entire sets of teeth are worn with great ease and satisfaction, when well made and rightly adapted. The construction and adaption of artificial teeth is an art in which some professors greatly excel others; there must, of consequence, be a variety in the value of their works. Some teeth are so ill made and unskilfully adapted, that they are troublesome to the wearer, an impediment to the speech and mastication, and even a greater blemish to the countenance than want of teeth; those that are well adapted are, on the contrary, easy, useful, and ornamental.

JOSEPH MURPHY.

Most dentists seem to think that thick plates are necessary, in order to preserve their shape; but others find the thinnest possible plates even better adapted, as every thing depends on the accuracy with which the plate is made to fit the jaw at every part of it. The error originates in this, that the one uses gold in its hardest state, the other in its softest.

He who applies collars, is obliged to solder them on the plate. This process softens the gold; and as he solders pins for the false teeth to be fastened on, the plate cannot be beaten into a hard state on the model after that process, without upsetting completely the whole soldered concern. To counteract the pliability of a plate necessarily soft, a sufficient thickness is given to it, when, generally speaking, the patient who wears soldered collars for teeth is the sufferer. The dentist who can and does raise the gold plate on a succession of models, until he has obtained one so nicely adapted as to be unexceptionable, produces a plate extremely thin, and so hard, as to be very elastic. He employs no soldering;

but he rivets on it the teeth intended to fill up vacancies. However thin the plate thus raised, from its natural elasticity, it embraces the remaining teeth and gums so comfortably, as to create no inconvenience; and the author has no hesitation in asserting, that this principle, applied in all its ramifications, is capable of affording real comfort in almost any case whatever, without ever inflicting injury on the adjoining teeth.*

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* The greatest improvement on the art of the dentist was a right understanding of the uses of the back teeth; and it is still a matter of astonishment how very few of its professors have emerged from the ignorance of the first dentists. The practice of the latter consisted in fastening the tooth or teeth to be inserted to the adjacent teeth, by means of ligatures. An improvement on this method was to form the artificial teeth of the hardest bone, so as to resemble nature, sockets of the same materials being left so as to resemble the gums. As the bone, from the moisture of the mouth, soon becomes discoloured, natural teeth began to be inserted on sockets of bone so nicely adapted to the parts for which they were intended, as to answer the purposes in mastication, &c. without inconvenience; and this method, variously modified, continues still to be the favourite practice with almost every dentist. The state of the back teeth is a matter of the first consideration to the success of the operation of pivotting teeth on old stumps. If the back teeth are wanting, the jaws approaching nearer than usual in mastication, a degree of friction on the front teeth ensues, which soon wastes or loosens them. In supplying artificial teeth of every kind, this circumstance ought always to be kept

Thin as they are, those plates are frequently known to wear for years without even a re-

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in view; otherwise the operation can never prove honourable to the dentist, nor satisfactory to the patient.

The fixing of artificial teeth on gold plates properly adapted to the gums, is, from its universal applicability, perhaps the best mode now in use. It is, however, when properly executed, the most difficult and least understood. Such are the late improvements by means of gold plates, that where every other method would fail, even in the ablest hands, they can succeed with certainty in this. It has, in fact, given a new tone to the art, and raised it above the imperfections so generally ascribed to it.

A common method of making these plates of gold was to form them into something like the shape of the parts to be supplied with teeth, by merely bending them with a pair of pliars, and forcing them into their intended place, which naturally forced out the teeth with which the plate came in contact; or if claws or springs were added, the same injurious result was produced. Those who improve on this method, have models of the mouth cast in brass, on which the plate was moulded in the way that dies are usually worked upon. So sensible of the difficulty of properly executing this model are many of the first dentist, that they never undertake it at all. The last improvement in gold plates was to cover over with caps, formed out of one plate, such back teeth or stumps as remained when partially worn down by attrition or decay, so as to prevent the contact of the front teeth in mastication,

A dentist who worked in bone only, would, when a case requiring a gold plate formed into caps for them occurred, be under the necessity of extracting such irregular teeth or stumps as interfered with his operations, or to make a covering of bone so fine as to break in mastication; whereas the use of such gold plate renders extraction unnecessary in every case where the teeth or fangs are not otherwise troublesome, But in many cases, the union of gold and bone are necessary to produce the desired effect.

ANDREW CLARK.

pair; and the Author is acquainted with one person's case, who has worn an upper set of handsome false teeth, set on a gold plate without any other hold except the cap that covers an only remaining tooth, during nearly ten years, and the tooth is still firm in its socket: the rest of the set were sacrificed to the malpractices of bunglers. In the under jaw, the same gentleman has not lost a single tooth, and the first that was lost in the upper jaw was displaced by a blow.

The illustration of gold plates attempted above, was of a case where the front teeth were longer than the grinders, of which none had been lost; and of a case where all had disappeared but one. In this latter instance, had a strong collar and heavy plate been applied, there is no doubt that the solitary tooth would long since have shared the same fate as its former companions.

In the case of front teeth meeting in the same perpendicular line, it is observable that as we advance in years they become shorter and shorter until worn up to the jaw. This

is occasioned by the waste that necessarily takes place by long use. In the other forms of the mouth, where the teeth of one jaw shut within those of the other, the front teeth rarely ever become shorter through life; for although the double teeth are wasted and shortened by attrition, on their grinding surfaces, the front ones only waste laterally where they touch each other.* This process, although it thins and weakens, does not shorten them. Their edges, however, in consequence, frequently chip and break.

To prevent this, gold plates might advantageously be applied to the double teeth, in cases even where none of them have been lost;

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*Abrasion of the teeth generally occurs in persons in whom the teeth are inclined to be under hung, and both jaws meet in contact, by which action the edges of the teeth in mastication are worked into deep and irregular cavities. The upper and under front teeth are generally the first that suffer, and in the space of a few years (if its mischievous progress be not prevented,) it will spread on the grinding surface of every tooth, whose sharp edges, like cutting chisels, work imperceptibly, by constant friction. The crown of some teeth wearing thus in deep and irregelar cavities, exposes the centre nerves of the teeth to pain, and produces dangerous ulceration on all sides of the tongue.

SIGMOND.

but the same effect is constantly produced in the mouths of young persons, from the loss of the grinders by extraction or decay; and let it be well considered, that for every tooth that is lost, an additional pressure and consequent injury to that amount is inflicted on the remaining teeth.* This is partly the cause why in old persons the front teeth drop out whole, and to prevent so unwished for a consummation, early and continued attention must be paid to the teeth.

In conclusion, let it be remembered by the wearers of artificial teeth, that teeth, or roots already loose from the absorption of their

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* The loss, however, of a tooth is of more serious importance than we may probably imagine: there is always a disposition in the anterior and posterior, as well as the lateral sides of the socket, to approximate, and the pressure which the extracted tooth bore is thrown upon those contigious to it; they have consequently to support an additional pressure, and there sockets become much sooner weakened than if the mouth had remained in its original state. A regular pressure on all the teeth is necessary, however, to their economy, and we will again consider another reason, why the extraction of a tooth should not be resorted to, without it is indispensably requisite. There is in the sockets a disposition to fill up, and thus the pressure of the two jaws against each other tends to counteract.

G. WAITE.

sockets, had better be extracted in order that their place may be supplied with more serviceable coadjutors to the other new teeth;—that artificial teeth, from one to a full set, must be subject to no pressure, those of one jaw against the teeth of the other, except where the broad surfaces of the grinders meet in mastication; or be the cause of lateral pressure against the natural teeth, among which they are set;—that the wearers are not to rest satisfied with artificial teeth when applied, until perfectly easy when in use;—and that ease is attainable in any case whatever, by a few visits to the dentist who understands his business, for he can by degrees relieve the parts where the frame bears most heavily and painfully, so as not to injure the work, while he affords immediate relief, and, until at last the substitutes for teeth feel as part or parcel of the mouth itself.

CASES

Illustrative of the Foregoing Remarks on Artificial Teeth.

Case.—Mrs. ——— could never be induced by any suffering to submit to the extraction of a tooth; in consequence of which she suffered severely, and for years, from that malady. The gums in front of the upper jaw were spongy and tumefied, emitting matter and blood as often as they were touched. So painful had they become, in addition to the pain arising from carious teeth, that she despaired of ever again being able to eat solid food; for she was then living almost entirely on slops. The following was the state of the mouth about the middle of the year 1828, which three years before was pronounced incapable of any cure by artificial means, by more than one of our London Dentists, whose names stand high in public

estimation. In the under jaw, the two eye-teeth were healthy, but wasted a good deal by the friction of the teeth opposed to them in the upper jaw. Beyond the eye-tooth on the left side all the teeth had disappeared with decay, with the exception of the second large grinder, and even that was broken away at the side next the cheek, so for as to expose the nerve. In front, between the eye-teeth, there were none remaining. In the right side, the two small and the first large grinders remained: but so deeply indented and worn down by the attrition of those that opposed them in the upper jaw, that they were too tender to be touched. In the upper jaw, the four front teeth, the two eye-teeth, with the two small grinders of the right side, and wisdom tooth, (this latter without an opponent below) still remained. In consequence of which it arrived at, and occasioned pain in, the under gum. On the left side there remained but one grinder; it was the middle one, and had no opponent in the under jaw.

The ordinary way of meeting such a case would be to declare the impossibility of recti-

fying the matter, without extracting all the tender teeth; or at most to supply the front teeth in the under jaw, which would be fastened to the remaining eye-teeth: (this was actually tried at Bath,) the natural consequence of which method would be, that their constant rubbing against the upper teeth would loosen the eye-teeth to which the artificial ones were fastened.

Treatment.—The spongy gums were so tender at first, they could only be pressed, by rubbing the lip against them daily for a few days: by-and-by the finger was applied to them, and a very soft brush dipped in diluted spirits of wine; a great deal of blood and matter was by these means discharged from them: gradually a hard brush could be used without pain; and although these operations were painful at first, because performed repeatedly during the day; by suspending operations occasionally, as the gums became too tender, or were deprived of their skin, they at last became perfectly healthy and cleanly, with a very small quantity only of the pus occasionally

oozing from the sockets of the teeth. Owing to long neglect, the corroding tartar had eaten into the necks of these front teeth, and exposed the bone, which was black and tender. The Anodyne Cement completely allayed all pain in them, and in the other carious and wasted teeth. The rest was done by artificial means, by another dentist. The plan adopted by him was the following.

A gold plate was adapted to the under jaw, on which were riveted natural teeth in front, and bone formed into teeth for grinders. The carious grinder of the left side being covered over with a gold cap, and the original form of the tooth completed of ivory, the tooth could be used in chewing without pain. Those teeth in the right side that were wasted, required in parts to be lengthened; and on those parts of their gold caps that were sunken, ivory was formed into teeth, by means of which, formed into one frame all pressure was removed from the sound eye-teeth, which were wasting laterally from the friction of the upper teeth. In the upper jaw a small gold case was made

for each side, which being formed into caps for the remaining teeth, the spaces between were filled up with artificial teeth formed of ivory; by which various contrivances an equal pressure was exerted on all the grinders, and the front teeth were consequently saved from all further lateral friction, and abrasion. Shortly before last Christmas this lady went to the country, having the complete use of all her natural and artificial teeth, as perfectly, and, as she said, as satisfactorily as if she had never suffered from them. It ought to be observed, that no trace of gold or artificial teeth could be observed on a casual glance at the lady's mouth.

Case.—Consequences of the application of a wrong principle in supplying artificial teeth.

A Gentleman had lost the two large grinders in the right side of his upper jaw, in consequence of which, the remaining wisdom tooth sunk to one side, and permitted an undue friction of the front teeth of the one jaw against those of the other, by which, the two front

and left lateral incisors were loosened and lost. In supplying their place, in order to keep all fast, four teeth were put into the place of three the effect of which was that the space widened, the adjoining teeth being forced out of the dental circle.

Another dentist repaired the case in the following manner. A plate of gold was formed inside the upper front teeth, which extended to the remaining wisdom tooth, and made to cover it and the small grinders with caps. The place of the two lost grinders was supplied with ivory teeth, which were adjusted to the bite of their opponents in the under jaw, on the new level created by the gold caps of the wisdom tooth, and two small grinders. By this contrivance, all pressure was removed from the front teeth. Three teeth only, the original number, were fastened on the gold plate, when the adjoining ones soon returned to their natural situation in the dental circle. To those who are unacquainted with such matters, it may be gratifying to learn that such artificial teeth can be removed with

the same facility as a glove from the hand, and that no trace of the counterfeit is visible when the apparatus is in the mouth.

Case.—Dr. ——— had lost six teeth of the upper jaw, consisting of the two bicuspides, first large grinder, and wisdom tooth of the right side, and the first large grinder and wisdom tooth of the left side. His teeth were naturally strong, and being too large for the jaws, those that were lost had decayed from lateral pressure. The remaining double tooth on each side, and the bicuspides of the left side, were much worn away from the friction of the corresponding under ones, which permitted the nearer approach of the front teeth, and they were also wasted in mastication; for they met laterally, and were worn to a mere shell; the teeth of the under jaw reached the gum at every shutting of the jaws, so that the thin points of the front teeth were constantly chipping away, and nothing but the great reduction in their length could induce him to have recourse to artificial aid.

In the ordinary way, the plan would be to fill

up the vacancies merely with ivory teeth, fitted to them, or by a gold plate adapted to the parts, and embracing the two remaining grinders, by means of strong collars, on which ivory teeth should be fastened.

By the adoption of either of these plans, the remaining grinders must be permitted to touch their opponents in chewing as usual; the artificial teeth being adapted so as to admit of this (and by persons who operated indifferently, even these would be so short as not to touch their opponents, for fear of causing pain to the gums, from bad fitting); the natural consequence of which would be, that the front teeth of both jaws would continue to grind each other away in mastication as formerly. The plan adopted in this case, was, the forming of a thin gold plate, for the upper jaw, adapted to the gums, and covering the grinders with caps; (suppose a piece of card between them, which for the time, effectually prevents the contact of the front teeth); the vacant spaces were filled up with artificial teeth, nicely adjusted, and on the new level of the remain-

ing natural grinders covered with gold caps, and made to meet the under teeth, so that an equal pressure fell on the old and new ones. The front teeth are now safe from any chance of further wasting, and the gentleman can use every part of his mouth, as effectually as he did before losing a tooth.

It ought to be remarked, whatever dentists may say to the contrary, that artificial teeth should be removed and replaced by the wearer, and should never occasion a day's uneasiness.

Case.—The first and second large grinders in each side of the jaw were wanting, and one of the the two remaining (wisdom teeth) was hollow and aching. The upper jaw was defective, but not so much so as to require the aid of artificial teeth, although owing to the loss of four under double ones, the upper front teeth were fast wasting away from friction in mastication. The aching under wisdom tooth was cured by the Anodyne Cement, and regularly stopped with gold. To prevent the further wasting of the front teeth, a small gold plate

was adapted to each side of the under jaw, and made to cover the two wisdom teeth and bicuspides on each side. The hollow spaces were filled with ivory, formed into artificial teeth, in size, appearance, &c. like those whose places they supplied. They were raised to the same height as the teeth covered with caps, so that an equal pressure fell on all the double teeth of the set, as fairly as if none had ever been lost; while the front teeth, although seeming to touch, never touched one another in shutting the mouth. The preservation of the front teeth was the principal object to be attained by this method, but another was accomplished at the same time, as will be seen by the application of a different principle.

The same jaw might be supplied with ivory teeth only;—but from the extreme sensibility peculiar to the under gums, the pressure of artificial teeth would cause so much pain, as long use alone could reconcile any person to; by having a plate or saddle under them, resting on the gum, the extremities of which were formed into caps for the adjoining teeth,

the pressure would be divided so equally as to create no inconvenience.

Were ivory only to be used in this case, the better way of making a plate would be to make it of one piece, and on a model of the whole jaw. If properly made, by its fitting fairly in every part, as well in the hollows as in that connecting part of it, which passes under the tongue from side to side, such a frame could, after a few weeks, be used with comfort; but the preservation of the front teeth would not by this means be attainable, on this account, that the new teeth must have their grinding surfaces on the same level with the present level of the remaining natural grinders, to equalize the pressure, otherwise it could not be borne by the wearer.

Case.—The Marquis of ——— had lost the first and third large grinders of the right side of the under jaw, and the remaining middle large grinder was decayed so far as to lay bare the nerve. It was frequently affected with tooth-ache, which the Anodyne Cement allayed; but as it destroys nothing,

the nerve still remained, and it being a case of long standing, it suppurated, in consequence of which, no attempt at a more permanent stopping was made.

In this case also the front teeth were wasting fast away; to prevent which, a gold plate was adapted to the affected side of the jaw,—the hollow tooth was covered over with a cap,—the vacancy on each side was filled up with artificial teeth, even to the absent half of the broken tooth; and his Lordship has now the perfect use of that side of his mouth in mastication, while all pressure being removed from the front teeth, it is reasonable to expect that they will last the remainder of his life.

The loss of front teeth from the waste or loss of the double teeth, is perhaps the most common case to be met with, and the most seldom remedied, unless the patient submits at least to the removal of all the remaining double teeth and stumps. The following case will serve as an illustration.

Suppose all the grinders, large and small, of the upper jaw to be wanting, while the un-

der jaw is perfect; you have six front teeth, the two eye-teeth, and four incisors remaining; these are wasted away or forced out at all angles by the pressure of their under jaw opponents. A plate of ivory, or of gold, with teeth on it, properly adapted to the roof of the mouth, will at once restore the masticating apparatus, and be so constructed, as to keep off all pressure from the front teeth; but if even one grinder has been left, the whole of the new teeth must have their grinding surfaces on the same level with it, and the friction of the front teeth will continue to be as troublesome as ever. Let the remaining grinder, however, be covered with a cap, and let the new teeth be as high as the grinding surface of such cap, and the front teeth will be as safe as when a card is placed between two double teeth.

Case.—Admiral ——— had sustained the loss of all his teeth, except eight, and some stumps; the sockets had absorbed irregularly from the early extraction of some of the teeth, and the gradual decay of others. In the under

jaw, one stump rose considerably out of the gum of the left side, and was very tender. Six of the remaining teeth were in this jaw, viz. a lateral incisor, eye-tooth, and bicuspis on each side; the two front incisors had been gradually loosened and expelled, while the two remaining ones were somewhat loose. In the upper jaw only two sound teeth remained, with the roots of the others at every possible stage of decay. To remedy this case, two blocks of ivory were fitted to the jaws, and finished as already described in other cases, with this difference, that the two remaining upper teeth were covered over with caps, at the parts not usually seen. The loose teeth thus supported, became fast again, as their sockets had not been much absorbed.

The following case is that of a young Nobleman, and is sufficiently interesting. The complement of teeth in the under jaw was nearly complete. In the upper jaw only eight remained; viz. the two bicuspides, and eye-tooth of the left side, with the eye-tooth and only one large grinder of the right side,

with the two front and one lateral incisor. The remaining large grinder was much decayed in the grinding surface, and ached, as did the first remaining small grinder of the other side, much decayed also from lateral pressure. Both the affected teeth were cured by the Anodyne Cement, and permanently stopped with gold; but the remaining ones were wearing fast away from the absence of the grinders. The evil was more apparent, as the front teeth of both jaws met perpendicularly. In order to prevent the further wasting of the front teeth, a plate of gold was formed on a model of the mouth. The remaining large grinder that was plugged, was covered over with a cap, as were the two small grinders of the other side, except at the visible parts where the gold was cut away. The place of the lost grinders was supplied by ivory teeth, on the same level as the covered teeth; and now, although he has the perfect use of every part of his mouth, the front teeth do not meet, although they seem to meet, and consequently are not subject to further waste from attrition.

Perhaps many dentists will say that the above cases are easy, and such as they are daily accustomed to rectify. Those who really can do so, without creating annoyance to their patients, deserve the gratitude of the aged and the toothless.

THE END.

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