

waggon and took his master's head upon his knees. So what had been Frank Spencer came back to the old home, and was laid again upon the narrow little bed he had slept in as a boy.

The faithful servant took up his station outside the door, and kept watch and ward through the night.

He spoke enough English to give a broken account of the last few hours. When the Rector came in the following morning, Ram Chunder drew him towards the boxes which had been brought into the square hall and left.

"Box for Missie. Let Ram Chunder open box," he pleaded.

So they opened the great teak chest, and inside the innumerable wrappings and linings they found filmy white garments delicately wrought. An exquisite robe of finest gossamer muslin richly embroidered had a paper pinned upon it bearing the inscription in Frank's writing, "The wedding-robe for my Amelia." So he had pictured her still young and fair as when they had parted. The Rector was an old man whose tears came slowly; but now they dropped hot and thick upon this token of faithful love, and Eliza threw her apron over her head and wept anew.

"She shall wear it now," the old man said tremulously. Near the bottom of the box was a cedar-wood casket with silver hinges and clasps and inlaying. Within it lay a necklace of pearls set in gold, and in a smaller case a finely-

worked gold ring set with turquoises in the form of forget-me-nots, with a diamond eye in the centre of each blossom.

All these treasures for the bride who never should be! Eliza's hands wrapped her mistress for the last time in the filmy snowy robe, and drew the delicate lace veil round the face, softening the few lines which the hand of Death, the great Beautifier, had left. She called the Rector into the room when her task was ended, and with reverent trembling fingers he clasped the priceless necklace round the neck, and put the ring upon the wedding finger of the crossed hands. She looked wonderfully young and fair; ineffable peace dwelt on every feature, and the smile still lingered faintly round her lips. She had renewed her youth.

As the Rector stood looking upon her for the last time, he murmured half aloud—

"Prepared as a bride adorned for her husband, and they shall enter in together to the marriage supper of the Lamb."

They rest together under the churchyard sod, and over the double grave stands a marble monument, on which is engraved—

"They were lovely and pleasant in their lives,
And in their death they were not divided."

ISABEL AUCHMUTZ.

WHY WE LOSE OUR TEETH.

BY "THE NEW DOCTOR."



It is impossible to overrate what a perfect set of teeth contributes towards health, comfort and beauty. But unfortunately few of us are the happy possessors of a perfect dentition, for from some causes the teeth of civilised races are the first part of the body to decay.

So rare is it to see a perfect set of teeth, that anyone who has lost less than four of them before her twenty-first year is completed

should consider herself particularly lucky in this respect.

An examination of the teeth of one thousand inhabitants of a London hospital gave us some idea of the state of dentition of the poorer classes, and though the well-to-do are not so faulty in their teeth as their poorer brethren, the difference is not nearly so marked as it is usually supposed. Of the thousand cases which we examined only eight, considerably under one per cent., possessed perfect teeth; three hundred and forty-six had lost less than four teeth; two hundred and seventeen had over twenty sound teeth all told; three hundred and six possessed more than one perfect tooth; one hundred and eighteen did not possess one single tooth which was perfect; whilst the remaining five had either no teeth at all or only one or two rotten stumps.

That a perfect set of teeth adds greatly to the beauty of the face cannot be questioned. Indeed, the teeth rank with the hair in so far that if neither of them alone will make a pleasing face, they will often mask ill-developed features and render more than passable a countenance which, if they too were faulty, would be plain or even hideous. Then there is scarcely anything which will detract so much from personal appearance as decayed teeth, especially when the upper front teeth are the seat of disease.

But, apart from their beauty, the teeth are most important organs, and our bodies cannot be kept in health if our teeth are not in working order. That food should be properly masticated is the first essential to good digestion,

and so it is not surprising that many, nay most, of the intractable cases of dyspepsia occur in people in whom the teeth are deficient, and that the first item in the rational treatment of all forms of indigestion is to see to the teeth, to remove and renovate such as are decayed, and to replace those which have been lost altogether.

The presence of decayed teeth in the mouth does far more harm than causing dyspepsia. Let alone such inconveniences as foul-smelling breath, unpleasant taste in the mouth, and toothache, bad teeth form one of the most important portals by which the body becomes invaded by organisms. The cavity of a rotten tooth forms an ideal spot for the development of most germs. Moisture, heat, food and absence of light—the four conditions most favourable to the growth of micro-organisms are present there, and as it is impossible to keep the mouth aseptic by any means whatever, the cavity of a decayed tooth is always a nest of various organisms.

The germ of pneumonia is not uncommonly found in the mouths of healthy people, and if these germs are inhaled into the lungs they produce pneumonia. Where the teeth are decayed, the germ of pneumonia grows apace, and so stands a very good chance of being inhaled into the lungs. Indeed, bad teeth may be considered as an important factor in the production of pneumonia, a very much more important factor than the "chill" or exposure to cold to which an attack of pneumonia is usually traced.

The germs of tubercle, of erysipelas and of all the forms of sore throat find a resting-place in bad teeth, and in those whose teeth are decayed these germs are always at hand to set up sore throat or consumption or what not on the first favourable opportunity.

Amongst middle-aged people bad teeth, especially if they be jagged, play an important part in the production of cancer of the lip, and of the tongue and possibly of the stomach also. Cancer of the tongue is a common disease, and of all deaths that from this affection is the most terrible to witness. It commonly starts from a small ulcer on the tongue caused by a rough tooth, and (presuming that cancer is caused by a germ) the tooth at the same time scrapes away the skin of the tongue and rubs the germs into the raw surface.

The diseases of the glands of the neck, and the complications to which they give rise, are most commonly connected with bad teeth, and as the affections of the glands are numerous, and most of them are serious, they alone would be a heavy debt to pay for bad teeth. Indeed, it is no exaggeration to say that of the predisposing causes to disease decayed teeth stands amongst those of the first importance.

We do not propose to write a treatise on dentistry nor to lead you deeply into the study of the causes and treatment of diseases of the teeth, but we will discuss in as scientific a manner as possible, but with little scientific language, what we know of the factors which cause our teeth to decay, and how we may remove them or render innocuous the teeth that they have attacked.

And the first and most striking point in connection with the cause of the decay of teeth is the influence of race. *Decayed teeth* is a disease of civilisation and is very rare indeed amongst savages. But it is a mistake to suppose that the savage races do not suffer at all from decayed teeth, or that all civilised races suffer in proportion to the state to which their civilisation has advanced.

There are many things which have to be taken into consideration when discussing points like this, and this illustrates one of the most important of them, namely, that the most obvious explanation is not necessarily the correct one. The civilised races suffer chiefly from decayed teeth, but it is not their civilisation that is the cause, but one or two side issues that have arisen out of civilisation. It is the nature of the food and the way it is cooked which are the chief predisposing causes of dental decay; and it is because we eat certain substances cooked in a certain way that we suffer so severely from loss of teeth.

The cause of dental decay is an organism—the same organism that turns milk sour—and that organism destroys the teeth by manufacturing lactic acid in the interstices of the mouth, which acid possesses the power of dissolving the teeth. This is the pathology of decayed teeth put in as few words as possible; it is, in fact, a far more elaborate process than this, but its essential part is that the teeth are dissolved by lactic acid caused by an organism. The lactic acid germ cannot create lactic acid *de novo*, and so there are two equally important items necessary to destroy the teeth—the germ and the food from which it is going to form lactic acid.

This germ is almost ubiquitous, and it is totally impossible to prevent it from getting into the mouth, and almost impossible to destroy it when it has got there.

This germ cannot make lactic acid except from certain materials, and as none of its proper food is found normally in the mouth, it can only manufacture its acid from substances introduced into the mouth as food. Nor is it every kind of food which will undergo lactic acid fermentation. It is only the starchy and saccharine foods which can be converted into lactic acid.

It is only starchy and sugary foods that can undergo lactic acid fermentation, and it is therefore these foods which cause the teeth to decay. And so we should expect to find that races which live on vegetable diet are more prone to diseases of the teeth than are those which feed mainly on flesh. And this we find to be the case, decayed teeth being almost unknown amongst the Esquimaux and other races which exist almost entirely on a meat diet.

The fact that eating sweets is injurious to the teeth is a familiar example of the same thing. How often do you hear it stated that sugar and sweets tend to injure the teeth because they are hard and break off the tooth enamel? But, as a matter of fact, gritty substances prevent the teeth from decaying. The enamel is far too hard and too firmly adherent to the deeper structures of the teeth to be chipped away by anything which you can take into the mouth.

Another reason why starchy food is so liable to cause dental decay is that for the most part it consists of pulpy or doughy material, which readily fills up the crannies between the teeth and becomes the habitation of the lactic acid germ.

A meat diet, on the other hand, does not tend to rot the teeth; first, because it cannot undergo acid fermentation,

but becomes alkaline with putrefaction; and secondly, because being fibrous, it cannot paste up the intervals between the teeth as can starchy food. If fibres of meat do get wedged in between the teeth, they give rise to discomfort and can be readily removed.

The cooking of food has a great influence upon the state of the teeth. The harder and coarser the food is, the more it has to be chewed, and the chewing of meat acts far more efficiently than any tooth-brush in removing foreign materials from the teeth. The soft highly-cooked food which we eat needs but little mastication and tends to clog the teeth and not to clean them.

The other causes of decaying teeth, such as poisonous vapours, diseases of the jaws, etc., are of no interest to any except medical men, and we will not stay to discuss them.

So now we come to the practical side of the question—how can we prevent our teeth from decay and stop or limit the disease of those which we have been unable to save?

The rational treatment of all affections is based on a knowledge of their pathology, so that the prevention and treatment of dental decay follows from what we have just told you about the pathology of that affection.

The ideal method of preventing dental decay would be either to prevent the lactic acid germ from gaining entrance into the mouth or else to avoid the starchy and saccharine foods. Neither of these methods is possible. We must eat starchy food, and we cannot prevent the germ from getting into our mouths. But we can prevent the food from remaining between our teeth, and we can, to a certain extent, limit the number of germs inside our mouths.

We have said that the mastication of food cleans the teeth of what may be clinging to them, and you will find that people who take time to chew their meat properly usually have sound teeth.

The most important means that we have at our command for keeping our teeth clean and free from decay is the tooth-brush. Judicious and frequent use of a suitable tooth-brush will do more than anything else to prevent the teeth from rotting. The tooth-brush should be made of soft badger hair, not of stiff bristles. It is used chiefly to remove soft material from the interstices of the mouth and gums, and for this purpose soft hair is far more efficient than stiff bristles. Then hard tooth-brushes make the gums bleed, which is most undesirable.

Since the chief value of the toothbrush is to remove particles of food from the mouth, it follows that the best time to use it is after a meal. Many people, who are otherwise scrupulously clean, are content to brush their teeth only once in the day, and that in the early morning before breakfast. Consequently their teeth are only clean for the brief period between their morning ablutions and their breakfast.

It is far wiser to clean the teeth after each meal, so that at no time is there any stray food particles left in the mouth. It is, however, rarely convenient to wash the teeth so often, and where the ideal method cannot be pursued, the teeth should be washed at least twice a day, after breakfast and before retiring. Breakfast is the meal at which we eat most starchy food, and so the teeth particularly need to be cleaned after that meal.

During sleep the organisms in the mouth are undisturbed and they can and do flourish at that time, if there is anything for them to flourish on. Amongst the germs that live in the mouth the lactic acid germ is most conspicuous and germinates at a prodigious rate. It is chiefly during the night that the teeth are rotted by this organism, and there is nothing that will preserve the teeth longer than thoroughly cleansing them the last thing at night.

By means of the toothbrush it is possible to keep the mouth pretty clear of decomposing materials, provided that the mouth and teeth are healthy; but where there are teeth with cavities in them, or deposits of tartar upon them, the task of keeping the mouth clean is a most difficult if not impossible one.

Although it is impossible to kill all the germs in the mouth and render it aseptic, one can to a certain extent keep down their numbers by the use of antiseptic solutions

and tooth-powders. We do not intend to describe or even to enumerate the various mouth-washes and tooth-powders that are before the public, for nothing would be gained by doing so; we shall rest content with two washes and one powder—and nobody wants any other.

A very good mouth-wash may be made by mixing half a dram of borax, twenty drops of liquefied carbolic acid, and one ounce of compound tincture of lavender with a pint of an equal mixture of glycerine and rose-water. This may be used diluted with three times its volume of warm water, to form a pleasant mouth-wash.

A few drops of tincture of myrrh, or of a mixture of equal parts of tincture of myrrh and glycerine of borax in a wine-glassful of water is a favourite mouth-wash and one which is especially useful where the teeth are loose or the gums have a tendency to bleed.

A really good tooth-powder fulfils several conditions—it is finely gritty; it contains some form of antiseptic, and it leaves a pleasant feeling in the mouth after use. There are thousands of powders which have these properties. Nearly all tooth-powders have chalk and powdered cuttle-fish as their base, to which is added orris-root, carbolic acid, scents, etc., to render them pleasant. Powdered chalk alone is not an efficient tooth-powder.

Powdered charcoal used to be used for many purposes, and one of its applications was as a tooth-powder. Charcoal when dry absorbs ill-smelling gases, but when wet is absolutely inert. It is therefore perfectly useless to give it to absorb gas or to destroy the smell from ulcers or bad teeth or anything else. It is no better as a tooth-powder than any other gritty powder is.

The tooth-powder is not nearly so important as the tooth-brush. You can wash your teeth perfectly efficiently with warm soap and water or indeed with water alone. But the powder helps to make the teeth look cleaner and removes slight deposits of tartar.

In very many persons, for some unknown reason, the saliva deposits layers of carbonate of lime upon the teeth chiefly at the line where the teeth leave the gums. This deposit is called tartar, and the treatment of it is a very important point in dentistry.

We are writing this article on dental decay—destruction of the teeth by lactic acid. Tartar has little or nothing to do with decay of the teeth. Tartar is an alkali, and is

deposited in an alkaline medium, and so one would not expect it to occur in connection with decayed teeth; but the crannies in the tartar and between the tartar and the gums are such convenient homes for organisms, that the teeth of persons with tartar usually suffer sooner or later. This is all we will say here about tartar, as we shall reserve the subject for a future occasion.

The treatment for teeth which have decayed is extremely important. No sensible person would ever have a rotten tooth in her head when she knows the dangers which it may produce. It is quite impossible to keep a hollow tooth clean, and it is a perfect nest of germs of all descriptions. Like one rotten apple in a sack, which will rot all the fruit around it, one rotten tooth may be the source from which the next is infected, and so on from tooth to tooth until all are useless. Therefore lose no time in having bad teeth seen to.

Decayed teeth can be removed or they can be repaired. Of course, whenever possible, they should be repaired. Mechanical dentistry has advanced to such a state that scarcely any tooth that can be seen is beyond the hope of repair, but it is well to remember that it does not follow that because a tooth can be repaired it is necessarily the best treatment to have it repaired.

Personally we should not have a tooth repaired unless it possessed a reasonable amount of healthy crown. It is simply a waste of time and money to "crown" a tooth unless the whole of the natural part of the tooth which is left is healthy. The person who is careful of her health and appearance will have her teeth seen to as soon as she discovers anything wrong with them, and by this she will save many teeth which a less careful person would lose.

Whenever a tooth has been removed, unless it has been taken out to make room for others, it should be immediately replaced by a false one. Let us warn you against the absurd prejudice for false teeth which so many of you have. You cannot tell the number of persons whose latter end is made miserable by constant dyspepsia due to indigestion from absence of teeth. Unless false teeth are put in soon after the decayed ones are removed the other teeth open out and leave intervals between each other, which intervals become the resting-place of much offal and many germs.

A fine set of teeth is one of the greatest blessings we can possess, and if it is denied to us, we can obtain the next best thing, which is a fine set of false ones.



WHAT CO-OPERATION DID IN OUR VILLAGE.

CHAPTER II.

WITH THE FLOWERS.

THE open, sunny side of our garden before long assumed a most business-like aspect. A narrow cinder-path divided the long strip into plots, and after manuring and lime-dressing, these were sown or planted in due course.

We possessed a lean-to greenhouse, and in this our boxes of seeds were put, so that young seedlings might be raised early for sale and for transplanting.

The first season's bloom had to be taken from such things as could be had from spring-sown seeds, and the bulb plantation which figured large in Agnes's mind had perforce to wait until the autumn. There was a piece of field

land beyond the end of our garden upon which she set her heart; it was the very place for a bulb field, being open to the sun on all sides, and on a gentle slope, and of course nothing less than a "field" would satisfy her. In imagination I believe she saw that field ablow with Pheasant-eye Narcissi, and she early began negotiating for its rental. In October she was made happy by becoming its tenant for five years at a rental of five pounds per year. She immediately laid down a few pounds of her capital in the purchase of bulbs, chiefly of three kinds, *Incomparabilis* "Sir Watkin," *Poeticus Ornatus*, and the ordinary *Poeticus*, which I called Pheasant's eye.

"Will that repay you?" I asked, "to have so few kinds, I mean."