

DENTISTRY

Ouch! That Toothache!

**Health as Well as Popularity Demands Clean Teeth;
Diet Important; Pyorrhea Can Be Prevented by Care**

By JANE STAFFORD

MAYBE "a clean tooth never decays" and maybe it does. Certainly millions of unclean teeth do not decay. Whether or not cleanliness prevents decay, there are plenty of other good reasons, esthetic, social and health, for keeping the mouth and teeth clean.

Fear of being an unwitting halitosis offender and desire for the gleaming cinema star smile are now pretty general. If they fail to induce one to keep teeth and mouth clean, there is the word of the medical man that unclean teeth are associated with irritations of the gums, cheeks and tongue that may be serious.

Prime essential for keeping the teeth clean is a good toothbrush. Two of them, in fact, one for morning and one for evening use. Using two brushes this way gives each a chance to dry thoroughly before the next use, lengthening the life of the toothbrush and also, if the brush

is rinsed thoroughly after each using, preventing it from becoming an incubator for germs.

Many and varied are the shapes and styles of toothbrushes. It seems impossible to make one that will fit exactly the dental arch inside and out. The chief need, however, is for the brush to be small and to have a handle that will let you manipulate it so that every tooth is brushed.

Ideas vary on how to use the toothbrush, but the old style scrubbing gesture seems definitely out. It might wear the enamel and it did not clean the important spots. Dentists now favor a sweeping gesture which starts with the gums and really brushes food and debris out of the corners, so to speak.

Dentists advise starting with the sides of the bristles against the gums, turning them toward the teeth as you sweep down. This avoids injuring the gums and brings the bristles right into position for best action on the teeth. The

sweeping is done in sections, covering a few teeth at a time, until inside and outside surfaces of all teeth have been gone over. Then you finish up with a rotary motion over the chewing surfaces of the back teeth.

Almost as important as the toothbrush is dental floss, which replaces the old-fashioned toothpick both socially and scientifically. Toothpicks may injure gums, dentists warn. There is a right and wrong way to use the floss, too. Take a large enough piece to get a good grip on both ends and slide it down gently between the teeth to avoid injury to gums or breakage of floss. The floss removes food and debris from the spaces between the teeth that cannot be reached by the toothbrush.

Finally, a special cleansing by the dentist, with removal of tartar and search for possible cavities, is advised every six months for the average person.

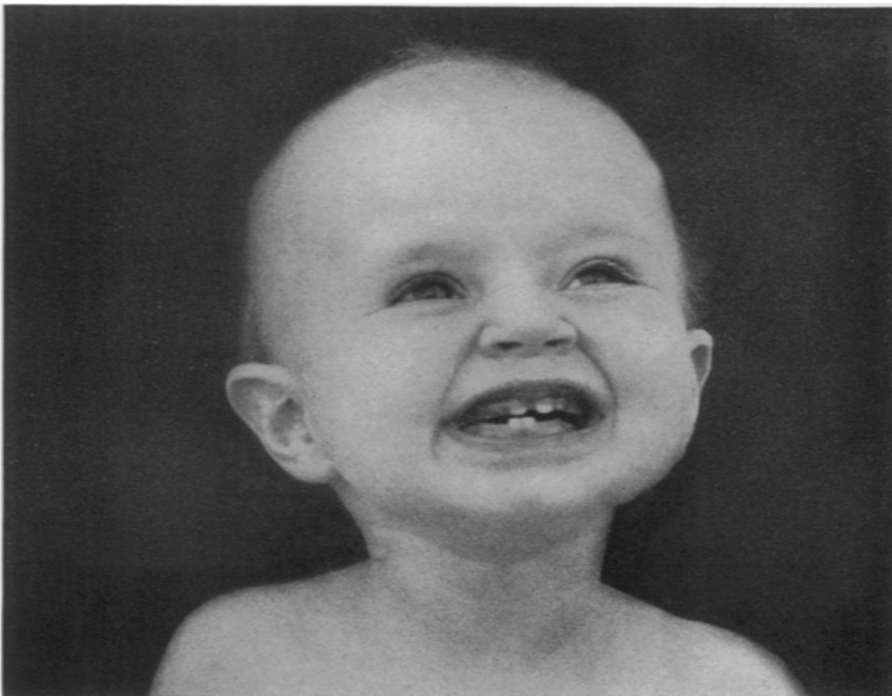
You do not see as many people with protruding teeth or irregular teeth that are crossed over each other as you did a generation ago. This is because people generally have become aware that these disfiguring conditions can be prevented and because dentists have become skilful at correcting the conditions if they do develop.

Appearance is not the only reason for wanting to prevent such conditions. Dental authorities tell us that when the teeth are irregular and the "bite" is not good, decay and pyorrhea are more likely to set in. Also, chewing may be inefficient with resultant digestive and nutritional disturbances.

Must Fit Together

By the "bite" is meant the way the teeth meet when brought together. The chewing surfaces of the molars and bicuspids are shaped so that the outer cusps or points of the lower teeth fit into the grooves formed between the inner and outer points of the upper teeth when the jaws are closed together at rest. The technical name for this is occlusion. Malocclusion describes the opposite conditions, when the teeth do not fit together normally.

Malocclusion may result from a great many causes, some of them operating before birth. Many a child, however, starts out with a perfectly normal set of baby teeth and then acquires malocclusion for one reason or another. Thumb-



NEW TEETH

This young lady can avoid many future toothaches if she has proper diet and keeps her mouth in hygienic condition.

sucking, a prime cause of protruding teeth, usually starts when the child is a baby and if not corrected, its disfiguring results appear early.

Among other causes of malocclusion are various habits of sleeping, resting and reading which the child may acquire. If he always sleeps on his fist, or always rests his cheek or chin on a hand while reading or studying, the pressure may force the bones and teeth out of line. One dentist has a cast showing how indentations from the knuckles were produced in the bones of the face as a result of sleeping on the fist.

Nervous habits of facial contortions, such as continual lip pursing or sucking or lipbiting, may cause enough muscle tension to pull the teeth out of line and spoil an otherwise normal bite.

Mouthbreathing Bad

Mouthbreathing, often due to enlarged tonsils and adenoids or nasal obstruction, also results in malocclusion. This is because the shape of the dental arch is largely determined by a balance between the outward thrust of the tongue and the inward pressure of the lips and cheeks. Letting the mouth hang open upsets this balance. You can get the idea if you try breathing through your mouth with your chin hanging and note the pull on your palate.

If the baby teeth come out before the normal time, or not until long after, some space needed for the larger permanent teeth will be lost and these will come in at an angle, causing malocclusion. Because the permanent teeth are about half again as large as the baby teeth this matter of providing room for them is important. Usually this is provided by the normal growth of the jaw, but vigorous chewing with accompanying muscular development helps to develop the jaws.

Caries or tooth decay is one of the most widespread diseases of civilized man. That much dentists and other scientists agree upon, and right there the agreement seems to stop.

When you go into the subject of causes and means of preventing caries, you find plenty of theories and many experiments. So many, in fact, that the American Dental Association is sponsoring a general survey in the hope of assembling all the facts and ideas so that scientists working in this field will know what has been proved, what disproved, and where to go next in order to find a final solution to the problem.

Diet seems undisputedly an important factor. In the first place, there are observations of primitive peoples who al-

most never had caries until they began eating civilized man's diet.

Then there are experiments with animals and with large groups of children in orphanages and schools. Some of these animals and some of the children were put on special diets. They had little or no caries as compared with the laboratory animals and the children eating their usual diets. The catch is that the good results were obtained, by different research teams, with quite different diets.

Phosphorus, calcium and vitamin D (the sunshine vitamin found in cod liver oil) are necessary for building strong teeth in the first place. One group of scientists believe that enough of these in the diet will prevent decay of the teeth.

Another group pins its faith on vitamin C, the anti-scurvy vitamin of citrus fruits, as a preventive of caries.

Still another group has found that even when the vitamins, calcium, phosphorus and calories were scanty in amount, children did not get caries if they were kept from eating sugar and fermentable starches. This group points out, however, that preventing caries by eliminating sugar from the diet will

hardly be practicable among people as fond of sweets as we are today.

There are many other ideas on the subject, but until some agreement is reached, the best thing you and I can do, it seems, is to follow general rules for good hygiene and diet. This means keeping the teeth and mouth clean, drinking plenty of milk and water, eating our spinach or other green vegetables and fruits, giving our teeth some fairly coarse foods for exercise, and seeing the dentist regularly so that if decay or caries starts, it can be checked before it gets very far.

Pyorrhea, in the words of one authority, "has been the curse of man in all ages since the dawn of the human race." Skulls of ancient peoples show the antiquity of the disease.

Its full name, pyorrhea alveolaris, means literally the flow of matter or pus from a tooth socket. The pus itself is not so important as the fact that the condition is apt to become chronic, as a result of which the gums separate from the teeth and once separated are not likely to become attached again. The teeth then become loose and either fall out or must be removed.

Another serious feature of pyorrhea is

THE AUTOBIOGRAPHY OF GENERAL ISAAC J. WISTAR (1827-1905)

Wistar lived through remarkable times and made the most of them. He traveled across the continent with the vanguard of the Forty-Niners in a journey almost epic in itself. He earned and lost small fortunes as a miner, trapper, muleteer, speculator, and lawyer before he was thirty, such was his versatility.

He killed Indians relentlessly when menaced; yet he considered creation of an Indian empire to halt encroachment of white settlers on the "rightful own-

ers" of the land. He never hesitated to pistol, club, or butt anyone who crossed him; yet the Governor of California singled him out to suppress the Vigilante rioters of 1856. He stood armed to fight Abolitionists and believed ardently in State rights; yet his privately-raised regiment is credited with saving the Union at Gettysburg and in the Seven Days Battles.

It is the last word from a leader of a vanished American generation.

Recent Reviews

"A really valuable adjunct to historical records. Narrated, vividly and honestly, one sees the story of the masses of the people, who developed this country and who saved it for the Union."

Boston Sunday Post.

"It is difficult to put the book down if once you start it."

Charles A. Kofoid,

Pony Express Courier, California.

"A Daring Biography. Did President Grant suggest that a prominent Philadelphian bribe him? That question, recalling the unsavory politics and scandals of the Grant Administration was posed openly for the first time with the publication of the late General Isaac J. Wistar's private memoirs."

Philadelphia Record.

"An epic, backward glance and a long overdue epitaph to another and bolder people."

Fort Worth Star-Telegram.

Pages viii + 528. Illustrated. Cloth, 8vo. Price \$5.00

Published December, 1937

Send your order to

THE WISTAR INSTITUTE OF ANATOMY AND BIOLOGY

Woodland Avenue and Thirty-sixth Street

Philadelphia, Pa.

that the germs are apt to travel via the blood stream to other parts of the body and cause new and possibly dangerous infections. Also, the person with pyorrhea, because of his foul mouth and loose teeth, is likely to lose his appetite and cannot chew his food properly. Malnutrition and digestive disorders may follow.

All this horrible state of affairs can be prevented and the condition even cured, if it does not go too long untreated. Of chief importance for both prevention and cure of pyorrhea is the regular visit to a good dentist every six months. The dentist can not only detect the earliest stages of pyorrhea and start immediate treatment but he can also detect and correct conditions likely to lead to pyorrhea.

Primary cause of pyorrhea is irritation at the border of the gums. Various factors may cause irritation of the gums, but the chief factor in the irritation which leads to pyorrhea is the accumulation of tartar about the necks of the teeth. This is why it is so important to go to the dentist regularly to have the

tartar deposits removed before they can do any harm.

The irritation these deposits set up leads to inflammation which in turn lessens the tension of the fibrous, elastic membrane that holds the tooth in its socket. Then the upper edge of the gums, or the gingiva as this tissue is called by dentists, loosens. This allows a darker and harder tartar to form under the gums. Germs get in, pus forms, the gums are sore and bleed easily and the tooth loosens.

Why Tartar Forms

The theory of why we have tartar is somewhat as follows: Certain salts, chiefly calcium phosphate, are released from the saliva onto a mass of debris consisting of food, germs, cells, and mucin shreds which have been sticking to the teeth. The combination of this sticky mass of debris and the salts becomes tartar. At first the mass is soft and flaky but it grows larger and harder and sticks tighter to the teeth. Some people have more tartar than others and this is believed to be due to their general state of health. Such persons, besides looking after their health, need to visit the dentist more often for removal of the tartar deposits.

Minerals and vitamins are needed to build strong teeth and bones. Of the minerals, calcium and phosphorus are most important since calcium phosphate constitutes the bulk of the teeth. The vitamins, particularly A, C, and D, are needed for tooth building because they coordinate and regulate the processes of growth and the development of teeth and bones from the minerals and other raw materials.

Milk and its products and fresh fruits and vegetables are the foods to eat in order to get these minerals and vitamins. Since they are needed for tooth building and since the teeth start forming months before birth, it is important for the expectant mother to eat a plentiful supply of these foods. The baby teeth are pretty well formed before birth even though they do not appear for some months after, but the permanent teeth continue their development during the child's early years of life. Modern babies are given cod liver oil and vitamins at an early age to make sure of their getting plenty of vitamins, and dentists say children must continue to eat plenty of fruits and vegetables and drink milk for their teeth's sake, even though there are plenty of other good reasons for including these foods in the daily diet.

But what about us grown-ups? The

answer dentists and physicians give is to go right on drinking milk and eating fruits and vegetables, though we can do with smaller quantities of milk than growing children need. You may think that since our teeth do not go on growing the way rats' teeth do, once they are fully formed, there is little more we can do about them from the diet angle. Diet, however, continues to be important for dental health.

Teeth are not just mechanical contrivances for chewing food. They constitute a delicate and specialized organ of the body and like any other organ, their continued health depends on normal nutrition and healthful supporting tissues. General ill health may make the teeth unhealthy, just as bad dental conditions may cause disease elsewhere in the body. We cannot always avoid specific diseases, but by following general rules of good hygiene and eating a well-balanced diet, we can help to keep our bodies, including the teeth, in good health.

Protective Foods

Which brings us back to milk, fruits and vegetables, and plenty of water. These are always the first things any physician, dentist or nutritionist considers in giving diet advice. Other foods are of course necessary to make up a balanced, nourishing diet. You have to have something besides vitamins and minerals to keep your body going. Fats, sugars and starches are needed for fuel and energy, and proteins to replenish the tissues. But most people will eat meat and potatoes and bread and butter and the like without being told, whereas they might neglect the vitamins and minerals—the milk, fruit and vegetables that nutritionists call "protective foods." That is why they are emphasized so heavily in arranging diets for adults as well as children.

You hear a lot about trench mouth these days. Most of us have probably been thinking that it was a brand new mouth ailment that arose during the World War. This is only partially correct. Actually it is a very old ailment. According to one authority, Caesar's armies had a lot of trouble with it. A mild form continued prevalent in Europe, but before the World War it was rarely seen in the United States.

During the war, the American soldiers, particularly those in the trenches, lived under conditions which lowered their general resistance and which also made it impossible for them to give proper attention to mouth and teeth hygiene. Consequently when they picked



Deep underground
... he found statues
20,000 years old!

And that is only one of the many thrills of discovery experienced by this intrepid and resourceful cavern explorer. He went skating on an ice lake in the heart of a mountain. Through brilliant deduction, he established beyond dispute the true source of the Garonne River. He—but get his book and enjoy for yourself his amazing adventures. Here is a strictly scientific narrative that reads like the Arabian Nights. Illus. \$3.00

by Norbert Casteret

**TEN YEARS
UNDER
THE EARTH**

THE GREYSTONE PRESS
11 W. 42nd St., New York

up trench mouth germs from Europeans, they had a hard time with it, and many became carriers of these germs, bringing them back home after the war.

The disease is caused by two germs, the fusiform bacillus and Vincent's spirochete. Its scientific name is Vincent's infection. The condition starts on the gums at the necks of the teeth. If it is treated at this stage, it is readily cured. The treatment must be carried out under the direction of a dentist.

Early symptoms are redness and thickening of the gums, with burning sensation, bleeding of the gums and ulcers that form at the points of the gums between the teeth. These points are blunted by the ulcers and may be covered by a dirty grayish patch.

If the condition is not treated at this stage, it may spread to the cheeks, floor of the mouth, lips and palate. In severe cases it spreads to the tonsils, throat and respiratory tract. Such a condition usually ends fatally.

Even if the condition is confined chiefly to the gums and teeth it may do serious enough damage there. It is a destructive process that may involve the membranes holding the teeth in their sockets and the bony sockets themselves. When this happens, the teeth will eventually be lost.

Because it is infectious or contagious, the trench mouth patient should be very careful to protect others from contact with his mouth or anything that goes into it, such as eating and drinking utensils, cigarettes, pencils and the like.

Identify Germs

Diagnosis of trench mouth should be made by identification of the germs, since the condition resembles other ailments and treatment for these ailments may only aggravate trench mouth.

The treatment for trench mouth is based partly on the fact that one of the germs, the bacillus, thrives on dead matter and does not like oxygen, while the other germ, the spirochete, belongs to a class that is susceptible to arsenic preparations. Treatment should not only be started early but must be continued until the patient is cured. Otherwise the condition will become chronic and may go on to a more serious and possibly fatal stage.

Science News Letter, November 19, 1938

Paper milk bottles are being perfected so that they are rated almost sterile.

Boiling vegetables with soda may keep them green but it reduces the vitamin content.



This Christmas Gift Coupon Saves You MONEY, Time, and Work

THOSE of your friends who would like to read SCIENCE NEWS LETTER, would enjoy getting a year's subscription from you as a Christmas Gift.

If you give *two* or more such subscriptions, they cost you \$3.50 each (a saving of \$1.50 per subscription)—or you can give *one* gift subscription, and *renew your own* subscription for a year, paying only \$3.50 per subscription.

Not only will it save you money to use the coupon, but think of the *time* and *work* you get rid of. No tramping in and out of department stores, gift stores, any kind of stores, during the jostling Christmas buying days. *Let the postman* do the walking. He is *paid* for it!

Fill out the coupon below and send it to SCIENCE NEWS LETTER. Solve at least one or two of your Christmas Gift problems that way. You can pay later, in January.

Mail This Coupon to SCIENCE NEWS LETTER, 2101 Constitution Ave., Washington, D. C.

Please send Science News Letter for one year to:

Name _____

Address _____

City and State _____

AND

Name _____

Address _____

City and State _____

Also **RENEW my own subscription at these rates.**

AND, send bill for above order to me in January.

My Name _____

Address _____

City and State _____

Special Christmas Gift Subscription Rates

ONE SUBSCRIPTION, 1 year	\$5
TWO SUBSCRIPTIONS, 1 year	\$7
ADDITIONAL YEARLY SUBSCRIPTIONS, each	\$3.50

No extra postage to anywhere in the world